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Wisconsin State Agricultural Society Transactions. Including addresses and papers presented at the farmers' state convention held in February, 1888, in the capitol, at Madison. Vol. XXVI 1888

Wisconsin State Agricultural Society
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1888

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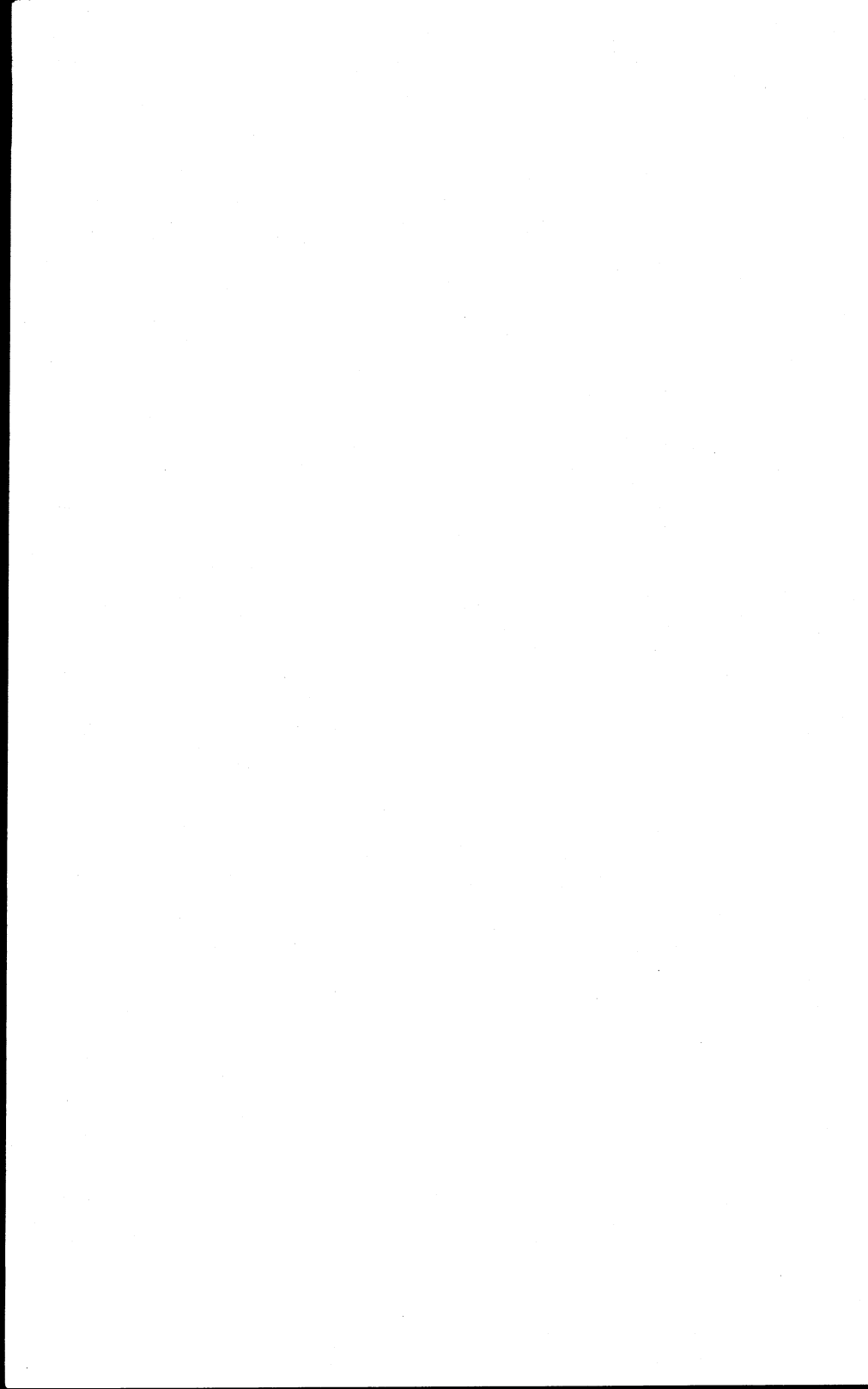
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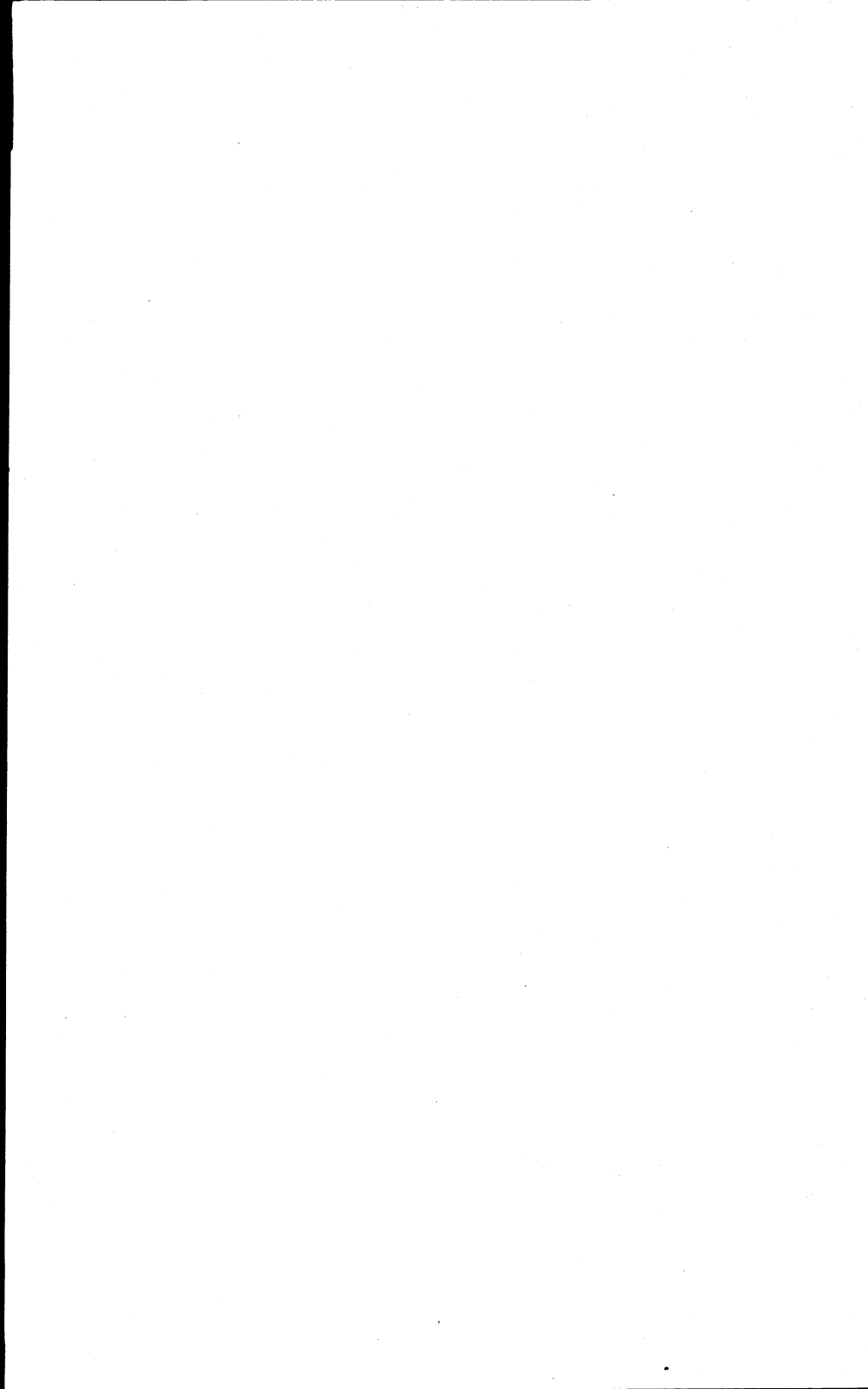
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WISCONSIN

STATE AGRICULTURAL SOCIETY

TRANSACTIONS.

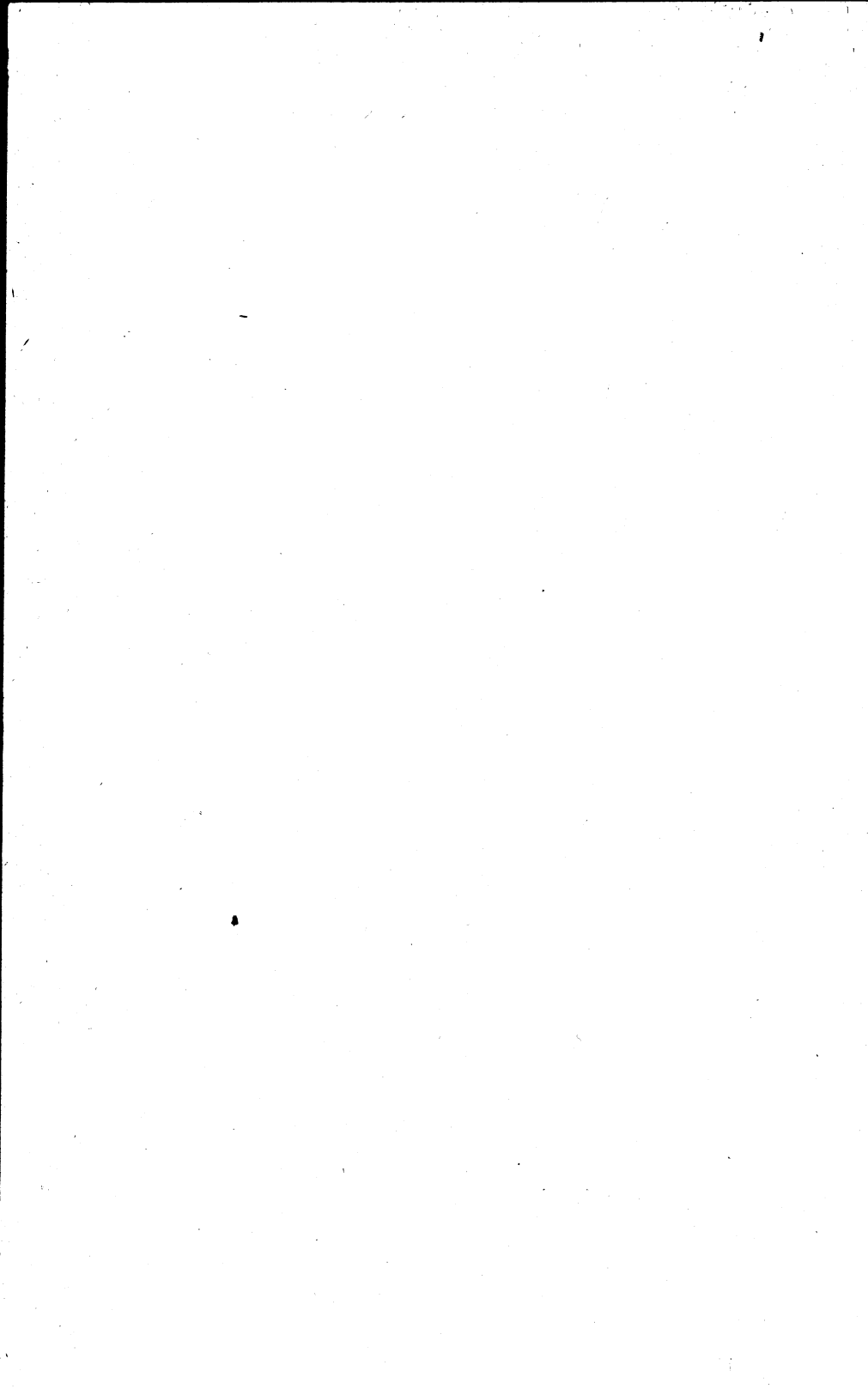
INCLUDING ADDRESSES AND PAPERS PRESENTED AT THE
FARMERS' STATE CONVENTION HELD IN FEBRUARY,
1888, IN THE CAPITOL, AT MADISON.

VOL. XXVI.

T. L. NEWTON, Secretary.



MADISON, WISCONSIN:
DEMOCRAT PRINTING COMPANY, STATE PRINTERS.
1888.



LETTER OF TRANSMITTAL.

OFFICE OF SECRETARY
WISCONSIN STATE AGRICULTURAL SOCIETY,
CAPITOL, Madison, Wis.

To Honorable JEREMIAH M. RUSK,
Governor of the State of Wisconsin.

Conforming to an act of the legislature of 1854, I have the honor of transmitting to you the 26th annual report of the transactions and financial statements of the Secretary and Treasurer of the Wisconsin State Agricultural Society. The present embarrassed condition of the treasury was not caused by wasteful use of its funds, or by lack of support, but is due to the gale of August 9, 1887, which demolished our entire exhibition building, causing the diversion of nearly eight thousand dollars from the treasury in rebuilding the same. An additional expense was also incurred in building officers' headquarters and increasing the number of stalls, sheds and pens. The State Fair of 1887, was the largest ever held by this Society, its receipts proportionate.

(The Board has strenuously endeavored to eliminate from the State Fair everything that might be thought objectionable, making it an occasion of pleasure, instruction and profit to all who attend.

Unmistakable evidence that the efforts of the Society are appreciated is found in the improved character of the exhibits, crowded exhibition halls, the overfilled stalls, sheds and pens, the increased demand for space in the machinery department, and multiplied patronage.)

Should the demands made upon the Society increase as they have for the past two years, our present grounds will be entirely too small to accommodate the crowd.

The Society is anxiously looking forward to the time when larger grounds and better accommodations can be accorded.

The farmers' annual convention of February 6th to 10th, held in the Capitol, brought together the farmers from all parts of the state, and was one of unusual interest. Its papers and discussions appear in this report. Applications for these reports continue long after the issue has been exhausted. They have become the reference book of the farmer. The law provides for the publication of 13,000 copies, less than one to every one thousand of our present population.

T. L. NEWTON,
Secretary Wisconsin State Agricultural Society.

TABLE OF CONTENTS.

	<i>Page.</i>
Letter of Transmittal	iii
Officers of the Society	1
Laws relating to the Society.....	2
Constitution	7
By-Laws.....	9
Life Members.....	13
Mortuary	22
Officers of County Agricultural Societies.....	24
Reports of Department Superintendents.....	28
Premium Awards.....	37
Executive Board Meetings	67
Society Meetings.....	69
Treasurer's Report	72
Farmers' State Convention	83
The New Relations of the University to Agriculture, by Pres. T. C. Chamberlin, Madison.....	84
The Higher Duties of Wife and Mother, by Mrs. S. C. Little, Janesville Discussion	92 100
The Short-Horn as It Was and Is, by William Warfield, Grasmere, near Lexington, Ky.....	103
Trotting Horse Breeding, by A. C. Parkinson, Columbus.....	109
Discussion	118
The Factors Which Govern the Value of Barnyard Manures, by Prof. W. A. Henry, Madison.....	127
Discussion	136
The Jersey Interest, by T. L. Hacker, Cottage Grove.....	141
The Coming Farmer, by Rev. M. G. Todd, Lodi.....	148
The Percheron Horse, by S. D. Thompson, Wayne, Ills.....	155
Our Prodigality, by E. W. Dwight, Brooklyn.....	163
Woman's Influence, by a Friend.....	172
The Dairy in Wisconsin, by H. C. Adams, Madison.....	177
Discussion	188
Status of Wisconsin Agriculture, by W. H. Morrison, Madison.....	201
Discussion	207
Farmers and Farmers' Wives, by Mrs. Mary E. Warren, Fox Lake....	211
Forestry, by Hon. Geo. B. Barrows, Madison.....	218
Discussion	241

	<i>Page.</i>
How Shall We Realize More From Our Feeding Stuffs, by C. R. Beach,	
Whitewater.	250
Discussion	260
What the Farmer Should Be, by Aaron Broughton, Albany	262
Dehorning Cattle, by H. H. Haaff, Chicago.....	271
Discussion	283
Practical Experiments in Drainage, by James H. Foster, Koro.....	297
Discussion	306
Thrift, by F. A. Updyke, Beaver Dam.....	311
Rural Population and the Educational Policy of the State, by W. H.	
Chandler, Madison	318
Old English Agriculture, by Prof. A. O. Wright, Madison	329
Honey, by J. W. Vance, M. D., Madison	337
Discussion	340
Farm Buildings, by B. S. Hoxie, Evansville	341
Discussion	347
Economic vs. General Destruction of Insects, by F. A. Carr, Madison.	351
Discussion	358
Our Grasses, by Prof. W. J. Burdick.....	382

OFFICERS OF WISCONSIN STATE AGRICULTURAL SOCIETY, 1888.

President.

CASPER M. SANGER, MILWAUKEE.
A. A. ARNOLD, GALESVILLE,
Ex-Pres. W. S. A. S.

Vice-Presidents.

SETH FISHER, CENTER.
H. D. HITT, OAKFIELD.
M. R. DOYON, MADISON.
WM. WILSON, WAUSAU.
J. M. SMITH, GREEN BAY.
A. W. VAUGHN, LODI.
J. M. TRUE, BARABOO.
A. A. ARNOLD, GALESVILLE.
G. J. SCHOEFFEL, MILWAUKEE.

Secretary.

T. L. NEWTON, BEAVER DAM.
(*P. O. Address*—Wisconsin State Agricultural Rooms, Madison, Wis.)

Treasurer.

CYRUS MINER, JANESVILLE.

Additional Members of the Board.

C. M. CLARK, WHITEWATER.
H. C. ADAMS, MADISON.
A. LUDLOW, MONROE.
F. C. CURTIS, ROCKY RUN.
N. D. FRATT, RACINE.
S. D. HUBBARD, MONDOVI.
JAS. G. BOYD, MILWAUKEE.
PROF. T. C. CHAMBERLIN, MADISON,
Pres. University of Wisconsin.
PROF. E. A. BIRGE, MADISON,
Sec. Wis. Academy Sciences' Arts and Letters.

LAWS RELATING TO THE SOCIETY.

The Wisconsin State Agricultural Society was organized March 8, 1851, and incorporated by

CHAPTER 5, LAWS OF 1853.

Section 1. The Wisconsin State Agricultural Society is hereby declared a body politic and corporate, and by that name it shall be known in all courts and places whatsoever.

Section 2. The objects of the society being to promote and improve the condition of agriculture, horticulture and the mechanical, manufacturing and household arts, it shall be allowed for those purposes only, to take, hold, and convey real and personal estate; the former not exceeding ten thousand dollars.

Section 3. The said corporation shall possess all the powers and privileges conferred, and be subject to all the liabilities imposed upon corporations by the revised statutes of this state, so far as the same may be applicable.

Section 4. For the purpose of organizing said society under this charter and for the transaction of such other business as may come before it, the executive committee of the society may call a meeting of the same at such time and place as they may deem proper; first giving due notice thereof.

CHAPTER 40, LAWS OF 1854.

Section 2. It shall be the duty of the executive committee of said Wisconsin State Agricultural Society, to keep an accurate account of the manner of expenditure of said sum of money hereby appropriated, and transmit the same, together with the vouchers therefor, to the governor of this state, in the month of January in each year, to be by him laid before the legislature.

Section 3. It shall be the duty of said executive committee of the Wisconsin State Agricultural Society to collect, arrange and collate all information in their power, in relation to the nature, origin, and preparation of soils; the cultivation and growth of crops; the breeding and management of stock; the application and character of manures and fertilizers; the introduction of new cereal and other grains; and other agricultural subjects; and report the same, together with a statement of their own proceedings, to the governor of this state, in the month of January in each year, to be by him laid before the legislature.

CHAPTER 53, LAWS 1858.

Section 3. The principal officers of the Wisconsin State Agricultural Society, shall have full jurisdiction and control of the grounds on which the society may exhibit, and all of the streets and alleys and other grounds adjacent to the same, during all such exhibitions, so far as may be necessary to preserve and keep good order, and so far as may be necessary to exclude therefrom all other exhibitions, booths, stands, or other temporary places for the retail or sale of any kind of spirituous or fermented liquors or other article or articles that they might deem objectionable or offensive to said exhibition. The President of the society, or in his absence, any Vice President, acting in his stead, shall have the power to appoint any necessary policemen to assist in preserving the peace, quelling any disturbance or arresting offenders, and conveying them to jail for trial; and all such policemen thus appointed shall be vested during the continuance of such exhibition with the ordinary powers and authority of common constables, and be entitled to similar fees for any services rendered or duty performed. Any person or persons who shall willfully and without leave enter any fair grounds during an exhibition, that are duly enclosed with a proper fence, not less than six feet high, either by climbing over, or under, or through said fence, or by fraudulently receiving and using the tickets or badge of another, or passing the gate-keeper without the proper payment and compliance with the rules of said grounds, shall be deemed guilty of a misdemeanor, and upon conviction thereof before any court, shall be liable to a fine of not less than five nor more than twenty-five dollars; and in case of non-payment, to imprisonment in the county jail not less than one nor more than ten days. Any such offender may be tried before any justice of the peace, or police justice most convenient to be found.

JOINT RESOLUTION NO. 7, SESSION LAWS OF 1866.

Resolved by the assembly, the senate concurring, That the rooms on the north side of the west wing of the capitol, to-wit: The rooms just made vacant by the removal of the attorney general, and the superintendent of public instruction, be prepared by the superintendent of public property, for the use of the Wisconsin State Agricultural Society, and that the said society be and hereby is allowed the use of the same until otherwise ordered by the legislature.

CHAPTER 95, LAWS OF 1870.

Section 1. Joint stock associations formed under the laws of this state for the encouragement of industry by agricultural and industrial fairs and exhibitions, may purchase and hold such real and personal property as shall be necessary for fair grounds and such property while used exclusively for such fairs and exhibitions, shall be free from taxes. Provided that the quantity of the land so exempt shall not exceed forty acres.

WISCONSIN STATE AGRICULTURAL SOCIETY.

CHAPTER 159, LAWS OF 1875.

Section 2. The superintendent of public property is hereby authorized to furnish the office of the Wisconsin State Agricultural Society with stationery upon the order of the secretary of said society, the same as other officers in the capitol are supplied.

CHAPTER 65, LAWS OF 1877.

Section 1, provides: That nothing in this act shall be construed to prevent any citizen of any other state from becoming a member or officer of any agricultural society or industrial association which is now organized or may hereafter be organized under or by virtue of any law of this state.

CHAPTER 219, LAWS OF 1877.

AN ACT to donate the cereals and other centennial exhibits made by the state, to the State Agricultural Society.

Section 1. The cereals and other seeds and glass globes in which said cereals and seeds were exhibited by the state at the centennial exposition; one agricultural map of the state; one case samples fine wool; one picture of the state capitol, and three pictures of centennial buildings, are hereby donated to the above named society, to be by them kept in the agricultural rooms in the capitol.

CHAPTER 199, LAWS OF 1880.

Section 1. The secretary of the State Agricultural Society is hereby authorized to procure for the use of his office the necessary amount of postage stamps or stamped envelopes for the payment of the postage of the official correspondence of his department. The account therefor shall be audited by the secretary of state upon the presentation thereof in the manner hereinbefore provided, and paid out of the state treasury.

CHAPTER 194, LAWS OF 1885.

Section 1. There is hereby annually appropriated to the Wisconsin State Agricultural Society the sum of four thousand dollars. *Provided*, that no warrant shall be drawn by the secretary of state for the payment of the sum of money hereby appropriated, except upon the presentation of a sworn statement, signed by the president and secretary of the said Wisconsin State Agricultural Society, certifying that the sale of intoxicating liquors has been prohibited and prevented upon the fair grounds of said society during the year for which the appropriation is made.

Section 2. It shall be the duty of the several agricultural societies entitled to the state aid of one hundred dollars in this state, to send their president or other representative to the state fair, where the annual election of officers is held, there to act on committee of award, and to cast the vote for the county in the aforesaid election.

Section 3. On arrival of the president or other representative at the state fair, he shall report to the secretary thereof, and on the certificate of the secretary of his attendance and performance of the duties named in section 2 of this act, the treasurer shall pay to him two dollars per day for the time he has been in attendance, not exceeding five days, and six cents per mile, one way, over the nearest traveled route from his home to the place where the state fair is held.

Section 4. This act shall take effect and be in force from and after its passage.

CHAPTER 435, LAWS OF 1885.

AN ACT to amend chapter 320, of the general laws of 1883, "an act to provide for the printing and distribution of the reports of state officers, departments and institutions."

Section 1. Sections 7, 8 and 9, of chapter 320, of session laws of 1883, are hereby severally amended so as to read as follows:

Section 7. There shall be printed annually by the state printer, and on the order of the commissioner of public printing, the following documents:

1. Thirteen thousand copies of the transactions of the Wisconsin State Agricultural Society, together with abstracts of the reports of the county and other agricultural societies, and such other matter pertaining to the industry of the state as shall be deemed important; provided the number of pages shall not exceed five hundred.

2. Sixteen thousand five hundred copies of the transactions of the Wisconsin State Horticultural Society, together with such other abstracts of reports of county and other horticultural societies, and such other matters pertaining to fruit growing and other horticultural interests of the state as shall be deemed important; provided the number of pages shall not exceed three hundred.

3. Eighteen thousand copies of the transactions of the State Dairy-men's Association, and such other matters pertaining to the dairy interests of the state as shall be deemed most important; provided the number of pages shall not exceed two hundred and fifty.

4. Eighteen thousand copies of the report of the Agricultural Experiment Station of the State University; provided the number of pages shall not exceed two hundred.

Section 8. Thirteen thousand volumes of said report shall be bound in cloth, uniform in style with volumes previously published, each volume to contain such part of one copy of each of the reports designated in the preceding section as the compiler shall select, the size of said joint report not to exceed one thousand pages; and shall be distributed as follows: Thirty copies to each member of the legislature; one hundred copies to the State Historical Society; twenty-five copies to each county agricultural society and district industrial association which embraces two or more counties, and furnish the state agricultural society a report of its proceedings; one

hundred copies to the state horticultural society; thirty copies to each county horticultural society; two hundred copies to the State Dairymen's Association; one hundred copies to the experiment station of the state university; twenty-five copies to the library of the state university; five copies to the Wisconsin Humane Society. To the governor, lieutenant governor, secretary of state, state treasurer, attorney general, state superintendent of public instruction, railroad and insurance commissioner, twenty-five copies each; to each public library in the state, two copies; and the remaining copies to the State Agricultural Society for distribution by its secretary.

Section 9. Twenty-five hundred copies of the transactions of the State Horticultural Society shall be bound singly in cloth, and one thousand in paper. Twenty-five hundred copies of the State Dairymen's Association shall be bound in cloth, and twenty-five hundred in paper. Twenty-five hundred copies of the report of the Agricultural Experiment Station of the State University shall be bound in cloth, and twenty-five hundred in paper, for the use of these several societies and departments for distribution or exchange.

Section 2. All acts or parts of acts interfering with the provisions of this act are hereby repealed.

Section 3. This act shall take effect and be in force from and after its passage and publication.

CONSTITUTION.

ARTICLE I.

OF THE NAME AND OBJECT OF THE SOCIETY.

This society shall be known as the "Wisconsin State Agricultural Society." Its object shall be to promote the advancement of agriculture, horticulture, and the mechanical and household arts.

ARTICLE II.

OF THE MEMBERS.

The Society shall consist of life members, who shall pay, on subscribing, twenty dollars, and of honorary and corresponding members, who shall be elected by a two-thirds vote of all the members of the executive board, at any regular meeting. The presidents of county agricultural societies shall be members *ex-officio*, entitled to the same privileges as life members, and together, shall be known as the general committee of the Society.

ARTICLE III.

OF THE OFFICERS.

The officers of the Society shall consist of a president, one vice-president for each congressional district of the state, a secretary, a treasurer, and seven additional members, who shall hold their respective offices for a term of one year from the first day of January next succeeding the date of their election, and until their successors shall have been elected; and all of whom, together with the ex-president latest in office, and the president and general secretary of the Wisconsin Academy of Sciences, Arts and Letters, shall constitute the Executive Board.

ARTICLE IV.

OF THE POWERS AND DUTIES OF OFFICERS.

The presidents and vice-presidents shall perform such duties as are common to such officers in like associations, as may be required by the executive board.

The secretary shall keep the minutes of all meetings, and have immediate charge of the books, papers, library, and collections, and other property of the Society. He shall also attend to its correspondence, and prepare

and superintend the publication of the annual report of the Society, required by law.

The treasurer shall keep the funds of the Society and disburse the same on the order of the president, or a vice-president, countersigned by the secretary, and shall make report of all receipts and expenditures at the regular meeting of the Society in December.

The executive board shall have power to make suitable by-laws to govern the action of the several members thereof. They shall have general charge of all the property and interests of the Society, and make such arrangements for the holding and management of general and special exhibitions as the welfare of the Society and the interests of industry shall seem to require.

The general committee shall be charged with the interests of the Society in the several counties where they respectively reside, and constitute a medium of communication between the executive board and the public at large.

ARTICLE V.

OF MEETINGS AND ELECTIONS.

The annual meeting of the Society for the transaction of general business, shall be held in its rooms in Madison, on the first Wednesday in December, at nine o'clock A. M., in each year, and ten days' notice thereof shall be given by the secretary in one or more papers printed in the city of Madison.

The election of officers of the Society shall be held each year during and at the general exhibition, and the exact time and place of the election shall be notified by the secretary in the official list of premiums, and in all the general programmes of the exhibition.

Special meetings of the Society will be called by order of the executive board, on giving twenty days' notice in at least three newspapers of general circulation in the state, of the time, place and object of such meetings.

At any and all meetings of the Society, ten members shall constitute a quorum for the transaction of business, though a less number may adjourn from time to time.

ARTICLE VI.

OF AMENDMENTS.

This constitution may be amended by a vote of two-thirds of the members attending any annual meeting; all amendments having been first submitted in writing at the previous annual meeting, recorded in the minutes of the proceedings, and read by the secretary in the next succeeding meeting for the election of officers. All amendments proposed shall be subject to amendment by a majority vote at the meeting when presented, but not thereafter.

BY-LAWS

SECTION I.

OF OFFICERS.

The officers of the Society shall, *ex-officio*, fill the corresponding offices in the Executive committee.

SECTION II.

OF THE DUTIES AND POWERS OF OFFICERS.

The duties of the President, in addition to those defined by the constitution and the by-laws regulating the duties of the permanent committee, shall be as follows, to-wit:

1. To inspect the fair grounds after they shall have been prepared for the annual exhibition by the special committee of arrangements, appointed for that purpose, and suggest such modifications or further preparations as he may deem necessary.

2. To formally open the annual fair of the society at such time as the Executive committee may prescribe, with an appropriate address.

3. As the executive head of the Society, to have a general supervision and control of the entire exhibition, subject only to the authority of the Executive committee.

The duties of the Secretary, more especially defined than in the constitution, shall be as follows:

1. To make a faithful record of each meeting of the Executive committee and keep such record in a condition for the convenient reference of any member thereof, at any time; also to make a record of every order drawn on the treasurer, and delivered to parties in whose favor they were so drawn — separately entering and numbering the orders drawn to pay premiums and those to pay general expenses, and so defining them — and of all moneys due the Society; in all cases holding the parties so indebted responsible therefor until they shall have presented him a certificate from the treasurer, showing that the same has been paid.

2. To open and carry on such correspondence as may be advantageous to the Society or to the common cause of agricultural improvement, not only with individual agriculturalists and eminent practical and scientific men of other industrial pursuits, but also with other societies or associations whose objects are kindred to ours, whether in this country or foreign

lands, and to preserve a journal of such correspondence in the archives of the Society.

3. To collect and arrange for convenient examination, standard agricultural works and periodical publications, together with such models, machines and implements as may be donated to, or otherwise acquired by the Society.

4. To investigate as far as practicable, the nature of fertilizers, indigenous and cultivated plants, insects injurious to vegetation, etc., and to collect and preserve such specimens thereof, as will illustrate the natural history and agricultural resources, condition and progress of the state.

5. To institute, and collect reports therefrom, needed experiments relative to the preparation of the various soils of the state for economical culture, the cultivation of different grains, fruits and garden vegetables, the breeding and raising of stock, etc.

6. To visit, by the advice of the executive committee, or as his own judgment may direct, the various portions of the state, and to give lectures on the science and practice of agriculture, wherever and whenever they may be deemed most necessary and desirable.

7. To co-operate with the superintendent of public instruction, and the agent of the normal school board, for the introduction and use in the schools of Wisconsin, of standard works on agriculture and other industrial arts and sciences.

8. To attend as many as possible of the industrial exhibitions of this country, particularly the county fairs of Wisconsin; to co-operate with the president and special committee of arrangements, for the judicious preparation and management of our state exhibition; and to have the sole supervision and control of the offices of entry thereat.

9. To carefully prepare and superintend the publication of the annual report of the Society to the governor of the state, embodying therein the proceedings of the State Agricultural Society, an abstract of the reports of the incorporated county agricultural societies of the state, and such reports, essays and addresses, or other matters of information, as may be calculated to enhance the value of said report.

Finally, it shall be his duty, not only by the means above named, but also through such other instrumentalities as he may devise, and the committee approve, to devote himself faithfully and unreservedly to the promotion of the industrial interests of the state.

It shall be the duty of the Treasurer —

1. To receive primarily and exclusively all moneys due the Society, from whatever source.

2. To keep a full and faithful record of all receipts of moneys coming into his hands, and of the sources whence derived, in a book specially furnished by and belonging to the Society, and to have the same open at all reasonable times, to the inspection of any person or persons authorized by the executive committee to make such examination.

3. To likewise keep an exact record of every order by him paid; and such record must be verified by the proper vouchers, showing that the sums therein named have been by him so paid.

SECTION III.

OF MEETINGS.

The Executive Committee shall meet annually, on the day preceding the day on which the annual meeting of the Society is held, on Monday preceding the first Tuesday of February, and again on the first day of the annual fair.

They shall also meet at the call of the secretary, the president and a vice-president of the Society concurring—and may adjourn to any stated time.

SECTION IV.

OF A QUORUM.

At any meeting of the Executive committee, four members thereof shall constitute a quorum for the transaction of business.

SECTION V.

OF PERMANENT COMMITTEES.

There shall be two permanent committees of the Executive committee, which shall be respectively styled the *Standing Committee* and the *Finance Committee*.

The Standing Committee shall consist of the president, the secretary and the treasurer, who shall have power in the recess of the Executive committee to draw orders on the treasurer for all necessary current incidental expenses. But the executive committee shall have authority, and are hereby required to revise the proceedings or transactions of said Standing committee, and indorse or disapprove of the same.

The Finance Committee shall consist of the president and treasurer, and it shall be their duty to suggest means for increasing the revenues of the Society.

They shall also have authority to invest any portion of the funds of the Society that may from time to time be set apart by the Executive committee for investment, disposing of such funds upon such terms and conditions as may be prescribed by the said Executive committee.

Each of the above-named sub-committees shall be responsible for the faithful discharge of their duties to the Executive committee, to whom an appeal may at any time be taken from their acts or decisions.

The auditing, adjusting, allowing or rejecting of all bills, claims or demands, of whatsoever nature, against the Society, and the issuing of orders upon the treasurer for payment of the same—except for the current incidental expenses of the society, as by this section already provided for—

shall devolve upon the Executive committee; and it shall be the duty of said committee to annually examine the books, papers and vouchers of the treasurer and secretary, and compare the same, and adjust the accounts between those officers and the Society, and report thereon at the annual meeting in December.

SECTION VI.

OF THE ORDER OF BUSINESS.

The following order of business shall be observed at all meetings of the Executive committee:

1. Reading the minutes of the preceding meeting.
2. Reading the minutes and reports of the Standing committee.
3. Reading the minutes and reports of the Finance committee.
4. Report of Auditing committee.
5. Reports from special committees.
6. Communications from the secretary.
7. Communications from members of the committees.
8. Unfinished business.
9. Miscellaneous business.

This order of business may be suspended, however, at any time, by a vote of the majority of the members present.

SECTION VII.

OF THE FISCAL YEAR.

The fiscal year of this Society shall commence on the first Wednesday of December in each year, and all annual reports of the year previous shall be made up to that time.

SECTION VIII.

OF THE EXPIRATION OF THE TERMS OF OFFICE.

The terms of office of all the officers of this Society shall expire on the 31st day of December of each year.

SECTION IX.

OF AMENDMENTS.

These by-laws may be amended at any regular meeting of the Executive Committee by a vote of eight members thereof.

LIFE MEMBERS.

Names.	Residence.	Names.	Residence.
Adams, James		Blair, F. J	Milwaukee.
Adams, L. L	Stoner's Prairie	Blanchar, Willard	Madison.
Alexander, O		Bostwick, J. M. ...	Janesville.
Allen, J. W.	Janesville.	Bostwick, R. M. ...	Janesville.
Allis, Edward P. ...	Milwaukee.	Bonnell, James. ...	Milwaukee.
Anderson, Matt ...	Pine Bluff.	Bonnell, L.	
Angell, R. R.	Janesville.	Boorse, Henry	Granville.
Angell, W. H.	Sun Prairie.	Brown, W. W.	Merton.
Atkins, Albert R. .		Boyce, A. A.	Lodi.
Atwood, David	Madison.	Boyd, R. B.	Milwaukee.
Atwood, Wm. T. ...	Portland, Org.	Bowman, J. M.	Madison.
Atwood, R. J.	Madison.	Bradley, C. T. ...	Milwaukee.
Armour, P. D.	Chicago.	Brale, A. B.	Madison.
Armstrong, L. G. .	Boscobel	Brazen, Benj.	Wauwatosa.
Arnold, A. A.	Galesville .	Brichener, G. H. .	Sheboygan F'lls
Aspinwall, D. M. ...	Farmington.	Brabazon, J. R. .	Delavan.
Ackerman, Philip .	Milwaukee.	Brockway, E. P. .	Milwaukee.
Abresch, C.	Milwaukee.	Brodhead, E. H. .	Milwaukee.
Auerbach, S. B. ...	Milwaukee.	Brown, Jas. J. .	Madison.
Asmuth, Anton ...	Milwaukee.	Brown, John A. .	Chicago.
Andrus, L. E.	Milwaukee.	Brown, Frank G. .	Madison.
Auer, Louis.	Milwaukee.	Bruce, A. T.	Madison.
Adams, H. C.	Madison.	Bryan, John	Cross Plains.
Agler, E. D.	Milwaukee.	Bryant, F. H.	Madison.
		Bryant, D. D.	Madison.
		Bryant, G. E.	Madison.
		Bryant, Jr., G. E. .	Pueblo, Cal.
Babbitt, A. O.	Beloit.	Bull, Stephen	Racine.
Billings, Carl.	Madison.	Bullard, James ...	Bridgewater, Da
Briggs, F.	Madison.	Bump, N. P.	Janesville.
Babbitt, Clinton ...	Beloit.	Bunker, Geo.	Madison.
Babbitt, D. H.	Auburn, N. Y.	Burgess, J. M.	
Bacon, W. D.	Waukesha.	Bush, Samuel	Milwaukee.
Bailey, A. P.	Oshkosh.	Button, Henry H. .	Milwaukee.
Bailey, M. T.	Madison.	Burnham, Jr., A. .	
Barlass, Andrew ..	Emerald Grove.	Burnham, J. L. .	Milwaukee.
Barlass, David.	Emerald Grove.	Burnham, Miles. .	Bl'ng Pr., Minn.
Barrows, E. S.		Byrne, John A. .	Madison.
Bates, A. C.	Janesville.	Brand, F. C. G. ...	Milwaukee.
Bement, E. R.	Oregon.	Burroughs, Geo. .	Milwaukee.
Bemis, Jervis.	Footville.	Bunde, Louis W. .	Milwaukee.
Benedict, J. D.	Bristol.	Beer, Richard. ...	Milwaukee.
Benedict, S. G.		Bass, Jas. W.	Milwaukee.
Benedict, W. G. ...	Milwaukee.	Busjager, A.	Milwaukee.
Benson, S. W.		Birkel, F. G.	Milwaukee.
Biglow, F. G.	Milwaukee.	Boomer, Elbert ...	Beaver Dam.
Bliss, C. M.		Boomer, E. J. .	Beaver Dam.
Bird, I. W.	Jefferson.	Buening, Job H. .	Milwaukee.
Bird, T. E.		Best, Jr., Chas ...	Milwaukee.
Bishop, J. C.	Fond du Lac.	Boyd, J. G.	Milwaukee.
Black, John	Milwaukee.		

Names.	Residence.	Names.	Residence.
Becker, Washington	Milwaukee.	Colman, W. W. . . .	Milwaukee.
Boynton, A. L. . . .	Milwaukee.	Colman, Ed.	Fond du Lac.
Bechtel, Daniel. . . .	Madison.	Colladay, W. M. . .	Stoughton.
Boyden, J. A.	Milwaukee.	Colton, John B. . . .	Madison.
Brown, Thos. H. . . .	Milwaukee.	Cooper, E. J.	Des Moines, Ia.
Bigelow, Wm.	Milwaukee.	Cornell, James. . . .	Oakfield.
Bergenthal, Wm. . . .	Milwaukee.	Cornwell, H. H. . . .	
Bartlett, L.	Milwaukee.	Corrigan, John E. . .	Milwaukee.
Bartlett, O. Z.	Milwaukee.	Cottrill, J. P. C. . . .	Milwaukee.
Bradley, Edward . . .	Milwaukee.	Cottrill, W. H. . . .	Appleton.
Boorse, J. H.	Milwaukee.	Cottrill, C. M.	Milwaukee.
Bacon, E. P.	Milwaukee.	Crampton, N. B. . . .	Madison.
Brigham, D. M.	Milwaukee.	Crawford, J. B. . . .	De Smet, Dak.
Boyd, Francis	Milwaukee.	Crawl, John	Center.
Burnham, John F. . .	Milwaukee.	Crilly, John J.	Milwaukee.
Buestrin, Henry . . .	Milwaukee.	Crocker, Hans.	Milwaukee.
Bradley, W. H.	Milwaukee.	Crosby, J. B.	
Boorse, W.	Milwaukee.	Crossett, B. F.	Janesville.
Bartels, J. L.	Milwaukee.	Culver, Caleb E. . . .	Shopiere.
Beckwith, S.	Milwaukee.	Cummings, Wm. . . .	Randolph, Ia.
Beck, C. A.	Milwaukee.	Curtis, F. C.	Rocky Run.
Blatz, A. C.	Milwaukee.	Curtis, D. W.	Ft. Atkinson.
Burchard, H. L. . . .	Milwaukee.	Curtis, Dexter. . . .	Madison.
Barth, Peter.	Milwaukee.	Cutting, J. W.	
Becher, J. A.	Milwaukee.	Coon, H. C.	Albion.
Baumgartner, H. . . .	Milwaukee.	Cook, W. H.	West Point.
Buerger, A.	Milwaukee.	Crawford, E. B. . . .	
		Cramer, John F. . . .	Milwaukee.
Carey, Ed. A.	Fond du Lac.	Cudahy, H.	Milwaukee.
Camp, H. H.	Milwaukee.	Campbell, J. G. J. . .	Milwaukee.
Cantwell, M. J.	Madison.	Cuppel, Chas.	Milwaukee.
Capron, Geo.	Boston, Mass.	Chapin, Chas. A. . . .	Milwaukee.
Carleton, W. D. . . .	Sun Prairie	Chandler, E. H.	Milwaukee.
Carpenter, J. E.	Windsor.	Campbell, M. Y.	Milwaukee.
Carpenter, J. H. . . .	Madison.	Cary, Edward J.	Milwaukee.
Carpenter, S. D. . . .	Carthage, Mo.	Corrigan, J. C.	Milwaukee.
Carr, N. B.	Madison.	Cribb, Geo. C.	Milwaukee.
Carr, Joseph S.		Carpenter, M.	Milwaukee.
Carter, A. M.	Johnson.	Crawford, J. N. . . .	Mukwanago.
Carver, P. S.		Chase, Clifford	Milwaukee.
Case, J. I.	Racine.	Cox, G. G.	Mineral Point.
Clark, C. H.	Madison.		
Clark, D. J.	Milwaukee.	Doyon, M. R.	Madison.
Chandler, J. C.	Madison.	Davis, Patrick.	
Chapman, T. A.	Milwaukee.	Dexter, W. W.	
Chase, Enoch.	Milwaukee.	Dahlman, Anth'ny . . .	Milwaukee.
Cheney, Rufus	South Evans- ton, Ill.	Dann, Obed.	
		Danks, E. P.	Stoughton.
Chipman, A.	Sun Prairie.	Daniells, W. W.	Madison.
Children, E.	E. Dubuque, Ia	Darling, K. A.	Fond du Lac.
Chipman, C. R.	Waunakee.	Darwin, A. G.	
Church, W. W.		Daubner, Geo. H. . . .	Brookfield, C.
Church, Wm. A. . . .		Davidson, Adam	Verona.
Clapp, G. W.	Oregon.	Davis, N. P.	
Clark, C. M.	Whitewater.	Davis, W.	Center.
Clark, Lewis.	Beloit.	Dean, E. B.	Madison.
Cochrane, John	Waupun.	De Hart, J. L.	West Lima.
Cogswell, A. W.	Galesburgh, M.	De La Matyr, W. A . .	Stoughton.
Colby, Charles.		Delaplaine, G. P. . . .	Madison.

Names.	Residence.	Names.	Residence.
De Mor, A. B.....		Finch, Lorin	Janesville.
Dewey, Nelson	Cassville.	Firmin, F. H	Hastings, Neb.
De Wolf, E.....		Fisher, C. C	Center.
Devoe, A. B	McFarland.	Fischer, Elijah ...	Center.
Dickerman, J. A. ...	Madison.	Fisher, Seth.....	Madison.
Dodge, H. S	Milwaukee.	Fitch, D.....	
Doolittle, W. J		Fitch, W. F	
Dore, J. S		Fox, Wm	Baraboo.
Doris, John		Fisher, C. T	Wauwatosa.
Dousman, T. C		Fitch, W. G	Milwaukee.
Dow, O. P	Palmyra.	Fuzgerald, R. P ..	Milwaukee.
Drakley, S		Fletcher, John ...	
Dunlap, S.....	Token Creek.	Flint, Jr., J. G....	Milwaukee.
Durkee, H	Kenosha.	Folds, Geo. H	Sioux Falls.
Dutcher, J. A	Milwaukee.	Foot, E. A	Footville.
Dwinnell, J. B	Lodi.	Foot, A. E	Milwaukee.
Dunham, M. W	Wayne, Ill.	Ford, J. C	Madison.
Durand, Wm. T	Milwaukee.	Fowler, James S ..	Milwaukee.
Des Forges, Geo....	Milwaukee.	Fox, A. O	Oregon.
Day, F. T	Milwaukee.	Fratt, N. D	Racine.
Durr, Emil	Milwaukee.	Frank, A. S	
Dickinson, O. B	Milwaukee.	Frank, Geo. R	Boscobel.
Drake, John R	Milwaukee.	Frankfurth, Wm ..	Milwaukee.
Dexter, Chas. J	Milwaukee.	Freeman, C. F....	Milwaukee.
Daly, John L	Milwaukee.	Friedman, Ignatius	Milwaukee.
Dever, Thos. P	Milwaukee.	French, Jonathan.	
		Fuller, M. E	Madison.
Eaton, J. O	Lodi.	Fuller, F. D	Madison.
Echlin, J. C	Janesville.	Fuller, E. M	Madison.
Edgerton, E. W	Milwaukee.	Fuller, Miss Frank L	Madison.
Elderkin, Ed	Elkhorn.	Foley, Jr., John ..	Milwaukee.
Elliott, E		Finney, F. N	Milwaukee.
Elliott, Jas. T	Racine.	Friend, Elias	Milwaukee.
Ellis, J. A		Fay, Chas. H	Milwaukee.
Edmunds, F. W		Frattinger, Peter ..	Milwaukee.
Ellsworth, L	Milwaukee.	Fitzgerald, H. J ..	Milwaukee.
Ellsworth, W. J	Madison.	Fisher, H. D	Florence.
Elmore, A. E	Green Bay,	Fuldner, Herman ..	Milwaukee.
Elmore, R. P	Milwaukee.	Fohey, Michael ...	Milwaukee.
Eldred, John	Milwaukee.	Farlow, Simeon ..	Burnett.
Elson, Charles	Milwaukee.		
Emmons, N. J	Detroit.	Gates, D. W. C ..	
Enos, Elihu	Waukesha.	Galbraith, Jas....	Janesville.
Esterley, Geo. W ..	Whitewater.	Gammons, Warrer ..	Middleton.
Ehlers, C. F	Milwaukee.	Gaylord, Aug	
Eastman, John	Madison.	Gernon, Geo	Madison.
		Gibbs, Chas. R	Whitewater.
Falk, Frank R	Milwaukee.	Gilbert, Thos	Oregon.
Farnsworth, J. H ..	Fond du Lac.	Giles, H. H	Madison.
Farwell, L. J		Gilman, H	Sun Prairie.
Fenn, G. W	Janesville.	Gleason, H. B	Madison.
Ferguson, D	Milwaukee.	Gooderow, H. D ..	Madison.
Ferguson, Benj....	Fox Lake.	Goodrich, Ezra ...	Milton.
Field, Martin	Muckwanago.	Gould, L. D	
Field, W. W.....	Odebolt, Ia.	Grady, F. M	Madison.
Fifield, L	Janesville.	Graham, Alex....	
Fifield, D. E	Janesville.	Grant, Albert	Milwaukee.
Fifield, E. G	Janesville.	Graves, R. T	Ripon.

Names.	Residence.	Names.	Residence.
Graves, S. W.....	Rutland.	Hodson, C. N.....	Janesville.
Green, Richard....	Middleton.	Hogan, Gilbert...	Eleria, O.
Green, N. S.....	Milford.	Holister, R. M....	Dakota.
Greenleaf, E. B....	Milwaukee.	Holmes, A. M....	
Greenman C H....	Dov'r Cen., Min.	Holton, Edward D	Milwaukee.
Greenman, H. D...		Hoven, Matt.....	Madison.
Gregory, J. C.....	Madison.	Hopkins, B. B....	Milwaukee.
Grinn-ll, J. F....	Farmers Grove.	Hopkins, E. C....	Milwaukee.
Groom, J.....		Hopkins, James...	
Gordon, G E.....	Milwaukee.	Hoskins, J. W....	
Graves, J. W.....	Hudson.	Hoskins, Alfred..	Janesville.
Grover, F. B.....	Rolling Prairie.	Hoyt, J. W.....	
Grubb, W S.....	Baraboo.	H-yt, F. E.....	Rochester.
Gurnee, J. D.....	Madison.	Hurlbut, E.....	Oconomowoc.
Goodrich, John R..	Milwaukee.	Hume, Wm.....	Oshkosh.
Garrett, G. W.....	Milwaukee.	Hutchins, C. A...	Fond du Lac.
Grant, W. J.....	Milwaukee.	Hutson, J. S.....	Stoughton.
Gray, T. A.....	Milwaukee.	Hudson, John...	Madison.
Green, David C....	Milwaukee.	Huntley, D.....	Appleton.
Gilligan, John....	Milwaukee.	Hyde, Edwin.....	Milwaukee.
Goodrich, T. W...	Milwaukee.	Hansen, Guido...	Milwaukee.
Gallagher, A.....	Milwaukee.	Hansen, Thos....	Milwaukee.
Goes, Geo. W.....	Milwaukee.	Hansen, John E..	Milwaukee.
Gartner, Andrew..	Milwaukee.	Hansen, Oscar C..	Milwaukee.
		Hubbard, S. D....	Mondovi.
Haight, Nicholas..	Madison.	Hopkins, H. C....	Milwaukee.
Haight, J. M.....		Hildebrand, And..	Milwaukee.
Hall, Augustus....		Hendee, C. A....	Milwaukee.
Hallock, Youngs..	Middleton.	Helms, Christian.	Milwaukee.
Hall, H. P.....		Heyn, Herman...	Milwaukee.
Hall, S. H.....	Madison.	Henes, Jr., Louis.	Milwaukee.
Hanchett, A. H...	Milwaukee.	Hoffman, Chas. G	Milwaukee.
Hatch, Eugene....	Jefferson.	Holbrook, Jas....	Milwaukee.
Hanks, A. S.....		Home, W. M....	Milwaukee.
Hammond, L. M...		Hauxhurst, Sidney	Milwaukee.
Hammond, E. S...	Fond du Lac.	Hamilton, A. K...	Milwaukee.
Harrington, N. M..	Delavan.	Hintze, C. F. A...	Milwaukee.
Harris, Jas.....	Janesville.	Hartman, F. W...	Milwaukee.
Harvey, J N.....	Ku'xville, Tenn	Haisler, M. J....	Milwaukee.
Hasbrouck, W....		Hiles, Geo.....	Milwaukee.
Hastings, S. D....	Madison.	Hurson, G.....	Milwaukee.
Hausmann, Jos...	Madison.	Hackendall, E....	Milwaukee.
Hawes, J. T.....	W'l'wLake, Da	Hirsch, H.....	Milwaukee.
Hawes, W. N.....	East Middleton	Hinrichsen, H. L.	Milwaukee.
Hayes, A. J.....	Milwaukee.	Hinkel, John....	Milwaukee.
Hazelton, Geo. C..	Washington.	Huntington, C. P.	Milwaukee.
Hazen, Chester....	Ladoga.	Hunkley, F. D...	Milwaukee.
Helmer, A. M.....	Waukesha.	Holstein, W. A...	Milwaukee.
Hempsted, H. N..	Milwaukee.	Hoff, J. J.....	Milwaukee.
Hicks, J. H.....	Oshkosh.	Harding, Geo....	Waukesha.
Hibbard, W. D....	Milwaukee.		
Higby, A. T.....	Ft. Atkinson.	Ilsley, Chas. F...	Milwaukee.
Hill, H. J.....		Inbush, J. H....	Milwaukee.
Hill, J. P. W.....		Ingram, A. C....	
Hill, Robert.....		Iverson, J. C....	Milwaukee.
Hill, J. H.....	Madison.		
Hinckley, B. R....	Summit.	Jacobs, Wm.....	Madison.
Hitt, H. D.....	Oakland.	Jackman, Hiram.	

Names.	Residence.	Names.	Residence.
Jeffrey, Geo.....	Milwaukee.	Larkin, Daniel ...	Madison.
Jenks, S. R.....		Larkin, Wm.....	Madison.
Johnston, W. A...	Minneapolis.	Lawrence, W. A...	Janesville.
Jenkins, J. C.....	Janesville.	Lawton, J. G.....	De Pere.
Jerdee, L. P.....	Madison.	Lazier, Ed.....	Rochelle, Ill.
Jerdee, M. P.....	Madison.	Learned, J. M....	California.
Johnson, John, Jr..	Madison.	Leidersdorf, B....	Milwaukee.
Johnson, M. B.....		Leitch, W. T.....	
Johnson, Joseph...	Hartland.	Leitch, Jr., W. T.	
Johnson, John V..		Leser, Waterman.	
Johnson, John A..	Madison.	Lewis, John L....	
Johnston, Hugh L.	Milwaukee.	Lindsay, E. J.....	Milwaukee.
Johnston, John....	Milwaukee.	Lloyd, Lewis.....	Cambria.
Jones, E. D.....	Fond du Lac.	Lockin, John.....	Pueblo, Col.
Jones, C. H.....	Sun Prairie.	Lockwood, John..	
Jacobs, Jr., W.....	Madison.	Ludington, H.....	Milwaukee.
Jones, John N.....	Madison.	Ludington, James	Milwaukee.
Jenkins, J. G.....	Milwaukee.	Ludlow, A.....	Monroe.
Josslyn, E. S.....	Milwaukee.	Lucy, O. K.....	Columbus.
		Lyman, H.....	Dakota.
Kellogg, Geo. J....	Janesville.	Lando, Julius	Milwaukee.
Keiwert, Emil.....	Milwaukee.	Laurie, James	Milwaukee.
Kent, A. C.....	Janesville.	Lynch, T. M.....	Janesville.
Kershaw, C. J.....	Chicago.	Lysaght, Wm.....	Monroe.
Keyes, E. W.....	Madison.	Lesley, John.....	
Kimball, M. G.....		Luenzmann, C ...	Milwaukee.
Kingsley, Geo. P...		Lennox B. G.....	Milwaukee.
Kingston, J. T....	Necedah.	Lewis, Calvin E..	Milwaukee.
Kiser, W. C.....	Tetonka, D. T.	Luening, A. F....	Milwaukee.
Kiser, J. C.....	Oregon.		
Knight, E.....	Myrtle, D. T.	Mann, J. E.....	Sun Prairie.
Kneeland, James..	Milwaukee.	Main, Alex. H....	Madison.
Knowles, Geo. P...	Fond du Lac.	Mann, A. L.....	Madison.
Knowles, Geo.....	Milwaukee.	Mann, Henry.....	Sun Prairie.
Knapp, G. A.....	Fond du Lac.	Mann, Curtis.....	Oconomowoc.
Knapp, J. G.....	Limona, Fla.	Manwaring, Wm.	Black Earth.
Knapp, Wm. A.....	Fond du Lac.	Marshall, Samuel.	Milwaukee.
Koss, Rudolph....	Milwaukee.	Martin, A. C.....	Ashton.
Koch, John C.....	Milwaukee.	Martin, C. L.....	Janesville.
Kelly, Thos. L....	Milwaukee.	Martin, Nathaniel	
Kraus, Fred.....	Milwaukee.	Martin, S. W.....	
Kern, J. B. A.....	Milwaukee.	Mason, Geo. A....	
Krull, Robert.....	Milwaukee.	Matthews, A. R...	Milwaukee.
Kane, A. L.....	Milwaukee.	Maxson, O. T.....	S Evanston, Ill.
Kendrick, C. D...	Milwaukee.	May, A. C.....	Milwaukee.
Klein, Peter J....	Milwaukee.	Mayhew, T. W....	
Kellogg, Rufus B..	Green Bay.	Mayhew, F. L....	
Kerin, John.....	Wauwatosa.	Mayhew, J. L....	
Keogh, Ed.....	Milwaukee.	McCarty, F. D....	
Kindling, Louis...	Milwaukee.	McComber, S. D..	New Lisbon.
Kipp, B. A.....	Milwaukee.	McConnell, W. N.	Dartford.
		McConnell, T. J..	Madison.
Ladd, M. L.....	Mendota, Ill.	McCormick, J. G.	Madison.
Lamb, F. J.....	Madison.	McDermott, Wm.	Fond du Lac.
Landaur, Max....	Milwaukee.	McDonald, A.....	Alloa.
Lapham, Henry...	Summit.	McDonald, J. S...	Fond du Lac.
Larkin, B. F.....	Madison.	McDowell, H. C..	Oconomowoc.
Larkin, C. H.....	Milwaukee.	McGeogh, P.....	Milwaukee.

Names.	Residence.	Names.	Residence.
McIndoe, N. D	Wausau.	Nunnemacher, R . .	Milwaukee.
McKenna, Martin . .	Madison.	Neacy, M	Milwaukee.
McLaren, Wm. P. . .	Milwaukee.	Neuser, Henry . . .	Milwaukee.
McNeil, David	Stoughton.		
McPherson, J. P. . .	Springdale.	Ober, R. P.	
Merrill, Alf	Madison.	Ogilvie, Robert . . .	Madison.
Miller, C. B	Madison.	Olcott, J. B.	Oshkosh.
Miller, John		Oliver, Joseph B . .	Milwaukee.
Millett, Charles O. .	Beloit.	Olney, C. W	La Cygne, Kan.
Mills, Simeon	Madison.	Orr, G. H	
Miner, Cyrus	Janesville.	Ott, Geo. V	Lawtey, Fla.
Miner, John B. . . .	Milwaukee.	Otjen, C. S	Milwaukee.
Mitchell, J. L	Milwaukee.	Ormond, Wm. M . .	Milwaukee.
Moore, B. F	Fond du Lac.	Osbourne, W. H. . .	Milwaukee.
Morden, E.	Madison.	Olcott, John D. . . .	Milwaukee.
Morehouse, L. H. . .	Milwaukee.		
Morrison, W. H. . . .	Madison.	Palmer, H. L	Milwaukee.
Moseley, J. E.	Madison.	Palmer, J. Y	Oregon.
Moxley, A. R.		Palmer, O. M.	Oregon.
Mullen, James		Palmer, Henry	Verona.
Murray, Geo	Racine.	Park, Wm. J	Madison.
Mann, Fred M.	Milwaukee.	Parker, C. H	Beloit.
Mooney, R. D	Milwaukee.	Parmsley, Ira	Center.
Miller, Fred	Milwaukee.	Parsons, P. B. . . .	
McPetridge, E. C . .	Beaver Dam.	Paul, John H.	Genesee.
Meinecke, A.	Milwaukee.	Partridge, J. S. . . .	Whitewater.
Manegold, A. F. . . .	Milwaukee.	Perry, Eli	Waupun.
Miller, Roswell . . .	Milwaukee.	Poppert, Geo	Milwaukee.
Morgan, Thos	Milwaukee.	Pettit, Chas	Milwaukee.
Morgan, Jas	Milwaukee.	Petit, L. J.	Milwaukee.
Mohr, Oscar	Milwaukee.	Patten, L. F	Janesville.
Mann, J. G	Milwaukee.	Patton, Jas. E.	Milwaukee.
Mendel, H. M	Milwaukee.	Paul, Geo. H	Milwaukee.
Manegold, Chas., Jr	Milwaukee.	Payne, Wm	Janesville.
McCord, Sam.	Milwaukee.	Payne, H. C.	Milwaukee.
Mueller, Oscar	Milwaukee.	Peffer, G. P.	Pewaukee.
Matthews, E. P. . . .	Milwaukee.	Pember, R. T.	Janesville.
Melindy, Miss M. A.	Milwaukee.	Perkins, P. W	Burlington.
Mock, B	Milwaukee.	Perrine, L. W	
Millard, A. F.	Milwaukee.	Perry, B. F.	Madison.
Mitchell, G. Stanley	Milwaukee.	Pfister, Guido	Milwaukee.
Miller, B. K	Milwaukee.	Pier, C. K	Fond du Lac.
Mueller, Louis J. . .	Milwaukee.	Pierce, C. L	Milwaukee.
Mix, E. T.	Milwaukee.	Pilgrim, D. T	Wauwatosa.
		Palmer, E. W	Madison.
		Pinney, S. U.	Madison.
Nason, S. L	Nasonville.	Plankinton, John.	Milwaukee.
Nash, C. D	Milwaukee.	Plumb, J. C	Milton.
Needham, E. G. . . .	Elm Grove.	Plumb, T. D	Madison.
Newcomb, S. B. . . .	Cold Spring.	Plummer, B. C	Wausau.
Newton, J. S.	Middleton.	Pond, Samuel A. . . .	Janesville.
Nichols, L. T	Berlin.	Porter, Wm. H. . . .	Marshall.
Norris, C. W	Milwaukee.	Porter, G. E.	Eau Claire.
Norton, J. B.	Madison.	Powers, W. J.	
Nowell, W. A	Milwaukee.	Paulson, Aug.	New Holstein.
Nelson, C. B.	Madison.	Pabst, Fred.	Milwaukee.
Newton, T. L.	Beaver Dam.	Pratt, E. E	
Nunnemacher, Rob.	Milwaukee.	Pres. St. Peter's Val	
Newcomb, C. W. . . .	Milwaukee.	Farmer's Club. . . .	Springfield.

Names.	Residence.	Names.	Residence.
Pratt, Oris	Spring Prairie.	Salisbury, R. W. . . .	Paoli.
Power, D. J.		Salsbury, D. F. . . .	Oregon.
Pabst, Fred., Jr. . . .	Milwaukee.	Sanderson, Ed. . . .	Milwaukee.
Pabst, Gustav. . . .	Milwaukee.	Sanderson, R. B. . . .	
Pereles, Thos. J. . . .	Milwaukee.	Sarles, John H. . . .	Boscobel.
Pereles, James M. . . .	Milwaukee.	Schute, Charles. . . .	
Phillips, J. P.	Milwaukee.	Seville, James	Lodi.
Pruesser, C.	Milwaukee.	Sexton, W. F.	Milwaukee.
Pfister, Chas.	Milwaukee.	Simmons, C. J.	Monroe.
Polzinsky, Jas.	Milwaukee.	Sharp, J. W.	Iowa.
Prichard, Miss M. . . .	Janesville.	Shaw, J. B.	
		Sheldon, A. H.	Janesville.
Quinn, Jeremiah	Milwaukee.	Sheldon, D. G.	Madison.
		Seaver, J. E.	Darien.
Ray, Chas.	Milwaukee.	Sheldon, S. L.	Madison.
Raymond, 'S. O.	Geneva.	Shepard, C.	Milwaukee.
Riordan, Chas.		Shipman, S. V.	
Reed, Harrison	Jackson v'l, Fla.	Skelley, Charles. . . .	Janesville.
Ressigue, A. C.	Janesville.	Skinner, Geo. J.	Stoux F'ls, Dak.
Reynolds, Thos	Madison.	Skinner, E. W.	Stoux City, Ia.
Reynolds, John		Sloan, I. C.	Madison.
Rexford, J. D.	Janesville.	Slocum, J. A.	Chicago.
Rice, E. M.	Whitewater.	Smith, Winfield	Milwaukee.
Richardson, D.	Middleton.	Smith, Angus	Milwaukee.
Richardson, Jas.		Smith, M. C.	Janesville.
Richardson, R. J. . . .	Janesville.	Smith, S. B.	Big Bend.
Richardson, H.	Janesville.	Smith, J. Maurice. . . .	
Richmond, A.	Whitewater.	Smith, J. M.	Green Bay.
Riebsam, C. R.	Madison.	Snell, H.	Madison.
Robbins, J. V.	New York.	Stickney, J. S.	Wauwatosa.
Rodgers, L.		Spencer, James C. . . .	Milwaukee.
Roe, J. P.		Spencer, R. C.	Milwaukee.
Rogers, C. H.	Milwaukee.	Squier, Thomas H. . . .	Waterloo.
Rogers, D. G.	Milwaukee.	Stannard, A. C.	Milton.
Rogers, J. S.	Burlington.	Stark, Chas. G.	Milwaukee.
Rogers, H. G.	Milwaukee.	Steele, Chester.	Milwaukee.
Rowe, Richard W. . . .	Madison.	Stevenson, Isaac. . . .	Marinette.
Rowe, W. E.	Arena.	Steensland, H.	Madison.
Ruggles, J. D.	San Francisco.	Stewart, C. R.	Karson, Minn.
Ryder, James K.	Waterloo.	Stewart, G. H.	Col. Spr'gs, Col.
Rawson, C. A.		Stilson, Edgar.	Oshkosh.
Richter, Fredrick. . . .	Chestnut St. Mil.	Stilson, Adelbert. . . .	Oshkosh.
Richards, Griffith. . . .	Cambria.	St. John, J. W.	Janesville.
Rich, A. W.	Milwaukee.	Stockman, John	Milton Junct'n.
Rohlfing, Wm.	Milwaukee.	Stone, Gustavus.	Beloit.
Rosenkrans, O. L.	Milwaukee.	Storm, Wm.	Madison.
Rogers, C. C.	Milwaukee.	Stowe, La Fayette. . . .	Sun Prairie.
Rademacher, Wm. . . .	Milwaukee.	Street, Richard	Waukesha.
Rust, Julius.	North Greenf'd.	Sutherland, C.	Syene.
Robinson, Geo. I. . . .	Milwaukee.	Swain, Wm. W.	Madison.
		Schardein, Emil.	Milwaukee.
Shaw, Geo. B.	Eau Claire.	Stark, Edward J.	Milwaukee.
Sherman, Amaziah. . . .	Janesville.	Schoeffel, Geo. J. . . .	Milwaukee.
Stevens, J. T.	Madison.	Stelloh, Henry.	Root Creek.
Sherman, Adelmair. . . .	Janesville.	Smith, A. E.	Milwaukee.
Stanley, William. . . .	Vienna.	Schweitzen, Theo. . . .	Milwaukee.
Sprecher, John	Madison.	Smith, A. A. L.	Milwaukee.
Sage, E. C.	Faulton, D. T.	Shea, Thomas.	Milwaukee.
		Shea, Edward	Milwaukee.

Names.	Residence.	Names.	Residence.
Saveland, John....	Milwaukee.	Van Slyke, N. B. . .	Madison.
Sawyer, James	Milwaukee.	Vaughn, A. W. . . .	Lodi.
Sanderson, Wm. . . .	Milwaukee.	Viall, Andrus	Madison.
Simonds, Wm. L. . . .	Milwaukee.	Vilas, Chas. H. . . .	Chicago.
Stolper, Chas.	Milwaukee.	Vilas, L. M.	Eau Claire.
Shaw, Chas. H.	Milwaukee, 93 W. Water St.	Vilas, Wm. F.	Madison.
Sanger, Casper M. . .	Milwaukee.	Van Norman, G. B	Milwaukee.
Sholes, Chas.	Milwaukee.	Vance, Frank L. . . .	Milwaukee.
Seiben, John	Milwaukee.	Vilter, Ernst	Milwaukee.
Spencer, John C. . . .	Milwaukee.	Vance, David	Milwaukee.
Snyder, Fred	Milwaukee.	Van Baumbach, C.	Milwaukee.
Stafford, H. H.	Milwaukee.	Ward, A. J.	Madison.
Sanborn, Jas. S.	Milwaukee.	Waggstaff, S.	
Simpson, E. B.	Milwaukee.	Wackerhagen, E. . .	Racine.
Seamans, S. H.	Milwaukee.	Wait, J. B.	
Salisbury, Abraham	Milwaukee.	Warren, Albert. . . .	Madison.
Spaulding, D. J.	B'k Riv. Falls.	Warren, J. H.	Janesville.
Stapleton, J. A.	Milwaukee.	Welch, W.	Madison.
Sawyer, H. W.	Hartford.	Werner, John	Sauk.
Somers, Peter J.	Milwaukee.	West, Henry	Madison.
Snyder, E. A.	W. Granville.	West, S. C.	Milwaukee.
Stoltz, H. L.	Milwaukee.	West, Henry M.	Milwaukee.
True, John M.	Baraboo.	Whaling, J. W. M. . .	Waukesha.
Tuttle, A. G.	Baraboo.	Wheeler, Geo. F. . . .	Milwaukee.
Tallman, W. H.	Janesville.	Wheeler, Guy	Janesville.
Taylor, E. T.	Mukwanago.	Wheeler, L. A.	Milwaukee.
Taylor, W. R.	Cottage Grove.	Wheelock, W. G. . . .	Janesville.
Tenney, H. A.	Madison.	Wheelwright, J.	Middleton.
Tenney, D. K.	Chicago.	Whitney, W. F.	Milwaukee.
Tenney, Samuel	Hartland.	Wicks, Thomas.	Milwaukee.
Terwilliger, Jas. . . .	Syene.	Wight, W. O.	
Thorson, John	Milwaukee.	Wightman, H.	
Tibbits, Geo. M.	Milwaukee.	Wilcox, C. T.	Janesville.
Tierney, K.	California.	Wilkins, A. W.	Milwaukee.
Twining, M. S.	Brodhead.	Wiley, O. S.	Benn Har., Mich
Tratt, F. W.	Whitewater.	Williams, C. H.	Baraboo.
Thomas, Amos.	Good Hope.	Williams, D.	Darien.
Thompson, W. H. . . .		Williams, Daniel . . .	Summit.
Thorp, J. G.	Eau Claire.	Williams, J. P.	
Todd, J. G.	Janesville.	Williams, G. G.	Whitewater.
Tolford, J. W.	Neillsville.	Williams, Randall	Janesville.
Torgerson, Lars	Madison.	Williams, S. B.	Madison.
Torrey, R. D.	Racine.	Wilson, Wm	Windsor.
Townley, John	Moundville.	Wilson, Zebina. . . .	Palmyra.
Treat, R. B.		Wood, J. W.	Baraboo.
Treat, George E.	Milwaukee.	Wootton, Robert . . .	Madison.
Theurer, Fred	Milwaukee.	Worthington, B. M	
Tucker, Joseph F. . . .	Milwaukee.	Wright, D. H.	Madison.
Tweedy, Jr., J. H. . . .	Milwaukee.	Wright, Geo.	Mt. Horeb.
Thompson, Dr. J. H	Milwaukee.	Wright, J. S.	Emerald Grove
Taylor, H. A.	Milwaukee.	Wright, Josiah T.	Janesville.
Van Brunt, W. A. . . .	Horicon.	Wylie, Geo. W.	Elkhorn.
Van Cott, Albert B.	Madison.	Weisel, Peter.	Milwaukee.
Van Etta, Jacob.	Madison.	Wagner, Julius. . . .	Milwaukee.
Van Kirk, N.	Chicago.	Weibel, August.	Milwaukee.
Van Schaik, Jr., W.	Milwaukee.	Weirab, Sylvan. . . .	Milwaukee.
		Walcott, H.	Milwaukee.

Names.	Residence.	Names.	Residence.
Warren, Fred C...	Fox Lake.	Webster, S. R....	Danville.
Wharton, J. S.....	Milwaukee.	Wilson, Wm.....	Wausau.
Wellauer, Jacob....	Milwaukee.	Yewdale, Merton H	Milwaukee.
White, C. W.....	Milwaukee.	Zweitusch, Otto ..	Milwaukee.
Wolf, W. H.	Milwaukee.	Zimmerman, Val .	Milwaukee.
Walsh, Michael....	Milwaukee.	Zimmerman, G. J.	Milwaukee.
Whitcomb, H. F...	Milwaukee.	Zinn, A. C.....	Milwaukee.
Weston, John.....	Burnett.		
Wurster, Jacob....	Milwaukee.		

MORTUARY.

W. C. Allen,
 J. M. Arnold,
 Isaac Adams,
 Chauncey Abbott,
 Chas. D Atwood,
 J. W. Ayres,
 H. M. Allen,
 Robert Baker,
 Geo. Baxter,
 Timothy Brown,
 James Barry,
 Fred. Bemis,
 A. C. Barry,
 W. G. Beecroft,
 George Barnes,
 A. A. Bennett,
 H. M. Billings,
 Perry Bostwick,
 W. A. Briard,
 B. F. Brown,
 H. D. Barrou,
 J. B. Bowen,
 Levi Blossom,
 F. W. Bayley,
 Ira P. Bacon,
 Guy Carter,
 Wm. Casar,
 S. Chandler,
 C. M. Campbell,
 C. B. Chapman,
 John Child,
 D. R. Coit,
 B. F. Catlin,
 A. J. Craig,
 J. B. Crass,
 H. Chase,
 Satterlee Clark,
 L. S. Curtiss,
 Seymour Curtiss,
 J. Cary,
 J. A. Carpenter,
 C. R. Clark,
 G. L. Davis,
 S. B. Davis,
 S. S. Daggett,
 E. P. Doty,
 J. B. Dousman,
 H. L. Dousman,
 Andrew Dunn,
 J. P. Dickson,
 Wm. Dunn,
 E. W. Drury,
 Abel Dunning,
 Chas. Durkee,
 N. W. Dean,
 John Davis,

J. E. Dodge,
 John Dahlman,
 M. M. Dorn,
 O. Ellsworth,
 S. S. Fisher,
 J. T. Furlong,
 Sidney Foote,
 Jacob Fowle,
 E. Fairbanks,
 W. H. Fox,
 John Fernley,
 John Furlong,
 S. B. Grant,
 Samuel Green,
 Anthony Green,
 Geo. G. Green,
 Eleazer Grover,
 Joseph Goodrich,
 C. Goodrich,
 Orrin Guernsey,
 R. E. Gillett,
 H. D. Greenman,
 Peter Haustan,
 J. Helfenstein,
 P. B. Hill,
 W. B. Hibbard,
 L. J. Hobart,
 David Holt,
 W. H. Hiner,
 L. P. Harvey,
 B. F. Hopkins,
 Wheldon Hughes,
 Carl Hoeflinger,
 Brad Hancock,
 John W. Hunt,
 E. Hulbert,
 Sol. Hutson,
 N. W. Harrington,
 Robert Hodge,
 A. G. Hanford,
 J. C. Hopkins,
 E. H. Jansen,
 Paul Juneau,
 H. C. Jacobs,
 J. C. Johnson,
 John Kimball,
 W. J. Kershaw,
 Sam. Klauber,
 Moses Kneeland,
 S. P. Kingsley,
 L. F. Kellogg,
 L. H. Kellogg,
 A. C. Kent,
 J. A. Lapham,
 Jas. R. Larkin,

Herbert Lewis,
 W. P. Lynde,
 J. D. Mosher,
 J. H. B. Matts,
 Clinton Matterson,
 E. D. Masters,
 Samuel Morse,
 Alex Mitchell,
 And. McColough,
 Alex. McGregor,
 E. F. Mabie,
 John B. Macey,
 Alex. McBride,
 A. S. McDill,
 David McKinna,
 Wm. A. Mears,
 Ira Miltmore,
 G. F. Moseley,
 D. S. Morse,
 Geo. W. McDougal,
 S. S. Merrill,
 John Nazro,
 B. F. Nott,
 E. Newton,
 H. M. Page,
 George Paddock,
 George Paine,
 W. F. Porter,
 David Post,
 John W. Park,
 Andrew Proudfit,
 D. G. Power,
 B. Pinckney,
 P. M. Prichard,
 W. A. Phelps,
 B. C. Plummer,
 John Reynolds,
 M. Reynolds,
 Herbert Reed,
 J. O. Rezer,
 John Rodermund,
 N. C. Rowley,
 Simon Ruble,
 Jas. H. Rogers,
 R. Roddis,
 Jas. Rosz,
 Harvey G. Russell,
 Rich. Richards,
 Anson Rogers,
 Wm. B. Slaughter,
 Jas. Sullivan,
 Geo. B. Smith,
 Frank Scollan,
 L. Sexton,
 M. Spaulding,

A. C. Shipman,
Kellogg Sexton,
J. M. Sherman,
Joseph Spaulding,
Geo. C. Stevens,
S. B. Scott,
W. E. Smith,
H. P. Strong,
Adam Smith,
J. B. Smith,
S. W. Smith,
H. L. Smith,
Wm. Spaulding,
Geo. Sherman,
Jeff. Sinclair,
Geo. H. Slaughter,
U. Schutt,

J. E. Sherwood,
Wm. Thompson,
John J. Talmadge,
M. J. Thomas,
Ole Thompson,
B. Troop,
W. H. True,
A. H. Terry,
F. Troedert,
Joseph Utter,
L. B. Vilas,
Henry Vilas,
A. H. VanNorstrand
E. B. Woolcott,
J. F. Willard,
Denis Worthington,
Charles Weed,

C. L. Williams,
W. A. White,
Jas A. Webb,
A. White,
T. L. Whittlesey,
H. O. Wilson,
N. A. Wright,
W. R. Warren,
James Webster,
S. G. Williams,
Geo. Worthington,
J. F. Wooley,
Martin Webster,
Wm. A. Wheeler,
A. H. West,
D. L. Wells,
J. E. Young.

LIST OF OFFICERS OF AGRICULTURAL SOCIETIES IN WISCONSIN, FOR 1887, WITH THEIR POST OFFICE ADDRESS.

Countries.	Name of Society.	Name and P. O. Address of President.	Name and P. O. Address of Secretary.	Name and P. O. Address of Treasurer.
Adams.....	Adams County Agricultural Society	L. W. Holmes..... Friendship.....	S. S. Landt..... Friendship.....	J. W. Gunning, Friendship.
Barron.....	Barron County Agricultural Society	W. W. Flynn..... Chetek.....	N. E. Carver..... Chetek.....	A. F. Nichols, Chetek.
Buffalo.....	Buffalo County Agricultural Society	J. W. Whelan..... Mondovi.....	Alex. Lers..... Gilmanton.....	R. Southworth, Gilmanton.
Burnett.....	Burnett County Agricultural Society	John O. Newgard..... Grantsburg.....	A. Gudmanson..... Grantsburg.....	John A. Swenson, Grantsburg.
Brown.....	Brown County Horticultural & Agricultural Soc'y.	W. H. Woodruff..... Green Bay.....	Warden Reynolds..... Green Bay.....	A. A. Warren, Green Bay.
Brown.....	Brown County Agricultural & Mechanical Ass'n.	E. E. Bolles..... Depere.....	John Smith..... Depere.....	C. G. Wilcox, De Pere.
Chippewa.....	Chippewa County Agricultural Society	Thad. C. Pound..... Chippewa Falls.....	J. W. Thomas..... Chippewa Falls.....	W. B. Bartlett, Eagle Point.
Clark.....	Clark County Agricultural Society	Jas. O'Neill..... Neillsville.....	Geo. A. Urne..... Neillsville.....	Chas. Sternitzky, Lynn.
Columbia.....	Columbia County Agricultural Society	David Owen..... Portage.....	Kennedy Scott..... Rio.....	A. J. Brown, North Leeds.
Columbia.....	Lodi Union Agricultural Society	Geo. Wylie..... Leeds.....	E. W. Gardner..... Lodi.....	Add-on Eaton, Lodi.
Crawford.....	Crawford County Agricultural Society	Hugh Porter..... Seneca.....	Fergus Mills..... Seneca.....	A. E. Mills, Mt. Sterling.
Dodge.....	Dodge County Agricultural Society	G. B. Congdon..... Beaver Dam.....	S. R. Webster..... Danville.....	S. W. Andrews, Juneau.
Door.....	Door County Agricultural Society	L. E. Stephanson..... Sturgeon Bay.....	C. A. Masse..... Sturgeon Bay.....	Henry Leonhardt, Sturgeon Bay.

Dunn.....	Dunn County Agricultural Society.....	A. C. Sherburne..... Rusk.....	H. W. Reed..... Menomone.....	Samuel Black, Menomone.
Fond du Lac.....	Wis. Cent. Stock Growers & Industrial Association	H. B. Stanchfield.. Fond du Lac.....	F. C. Moore..... Fond du Lac.....	E. A. Galloway, Fond du Lac.
Grant.....	Grant County Agricultural Society.....	J. J. McKenzie..... Lancaster.....	R. Meyer, Jr..... Lancaster.....	W. J. McCoy, Lancaster.
Grant.....	Boscobel Agricultural & Driving Park Association	Geo. F. Hildebrand Boscobel.....	T. J. Brooks..... Boscobel.....	M. B. Pittman, Boscobel.
Grant.....	Blake's Prairie Agricultural Society.....	John Carey..... Bloomington.....	F. L. Greer..... Bloomington.....	D. F. Brown, Bloomington.
Green.....	Green County Agricultural Society.....	G. T. Hodges..... Monroe.....	J. H. Weber..... Monroe.....	Fred P. Treat, Monroe.
Iowa.....	S. W. Wisconsin Industrial Association.....	G. G. Cox..... Waidwick.....	Delos P. Beech..... Mineral Point.....	W. A. Jones, Mineral Point.
Iowa.....	Iowa County Agricultural Society.....	Joel Whitman..... Dodgeville.....	Ben. J. Thomas, Jr. Dodgeville.....	F. W. Stratman, Dodgeville.
Jackson.....	Jackson County Agricultural Society.....	J. W. Hamilton..... Merrillan.....	J. J. McGilivray.. Black River Falls	R. B. Jones, Black River Falls
Jefferson.....	Jefferson County Agricultural Society.....	John Whittet..... Busseyville.....	C. F. Bullwinkle... Jefferson.....	G. J. Kispert, Jefferson.
Jefferson.....	Central Wis. Agri. and Mech. Association.....	Gust May..... Watertown.....	S. S. Woodward... Watertown.....	Jos. Salick, Watertown.
Juneau.....	Juneau County Agricultural Society.....	C. W. Potter..... Mauston.....	F. C. Riter..... Mauston.....	F. Winsor, Mauston.
Kewaunee.....	Kewaunee County Agricultural Society.....	John L. Haney..... Kewaunee.....	John Wattawa... Kewaunee.....	Lorenz Lutz, Kewaunee.
La Crosse.....	La Crosse County Agricultural Society.....	Jas. McEldoway... West Salem.....	G. W. Robinson... West Salem.....	W. Smith, Bang. r.
La Fayette....	La Fayette County Agricultural Society.....	W. W. Murphy..... Darlington.....	Wm. Hooper..... Darlington.....	John B. Roy, Darlington.
Langlade.....	Langlade County Agricultural Society.....	Lloyd Breck..... Antigo.....	A. B. Millard... Antigo.....	C. S. Leykom, Antigo.
Marathon.....	Marathon County Agricultural Society.....	S. M. Qraw..... Wausau.....	Wm. Wilson..... Wausau.....	Ang. Kickbush, Wausau.
Marquette....	Marquette County Agricultural Society.....	John Ellis..... Moundville.....	T. Skinner..... Merritt's Landing	Hugh Hamilton, Westfield.

LIST OF OFFICERS OF AGRICULTURAL SOCIETIES FOR 1888 - Continued.

COUNTIES.	Name of Society.	Name and P. O. Address of President.	Name and P. O. Address of Secretary.	Name and P. O. Address of Treasurer.
Monroe	Monroe County Agricultural Society	A. H. I-ham Sparta	Myron Rowley Sparta	G. A. Richardson, Sparta.
Monroe	Eastern Monroe County Agricultural Society	J. E. Mooney Tomah	M. L. Hineman Tomah	W. Y. Baker, Oakdale.
Oconto	Oconto County Agricultural Society	Ed. Scofield Oconto	Geo. Beyer Oconto	Chas. Hall, Oconto.
Outagamie	Outagamie County Agricultural Society	John Dey Greenville	F. W. Harriman Appleton	M. M. Comb, Hortonville.
Outagamie	Seymour Fair and Driving Park Association	Peter Tubbs Seymour	F. R. Ditmer Seymour	D. A. Kenyon, Seymour.
Ozaukee	Ozaukee County Agricultural Society	A. M. Alling Saukville	D. E. McGinley Saukville	T. Halpin, Cedarburg.
Pepin	Pepin County Agricultural Society	S. L. Plummer Waterville	A. G. Kelton Durand	Geo. Tarrant, Durand.
Pierce	Pierce County Agricultural Society	G. W. McMurphy Prescott	F. Meinecke, Jr. Prescott	S. J. Atwater, Prescott.
Pierce	Pierce County Central Fair	C. M. Stafford Ellsworth	J. S. Rounce Ellsworth	H. B. Warner, Ellsworth.
Polk	Polk County Agricultural Society	G. P. Anderson Bunyan	F. B. Dorothy St. Croix Falls	W. M. Blanding, St. Croix Falls.
Portage	Portage County Agricultural Society	S. N. Buswell Amherst Junct'n	A. G. Smith Amherst	A. M. Nelson, Amherst.
Portage	Cent. Wis. Agri., Mech. and Scientific Association	Jas. Reilly Stevens Point	F. J. Simons Stevens Point	E. Burr, Stevens Point.
Price	Price County Agricultural Society	J. J. Metzgar Butternut	C. M. Gardner Phillips	F. L. Hunt, Phillips.
Racine	Racine County Agricultural Society	A. J. Hannas Racine	C. A. Jones Racine	Thos. Marshland, Racine.

Richland.....	Richland County Agricultural Society.....	H. M. Bock..... Richland Center.	F. W. Burnham..... Richland Center.	T. M. Hart, Richland Center.
Rock.....	Rock County Agricultural Society.....	R. T. Pember..... Johnstown.....	E. B. Heimstreet..... Janesville.....	S. L. James, Janesville.
Sauk.....	Sauk County Agricultural Society.....	A. D. McGillivra..... Baraboo.....	R. B. Griggs..... Baraboo.....	G. C. Grisim, Prairie du Sac.
Sauk.....	Baraboo Valley Agricultural Society.....	James Lake..... Reedsburg.....	A. F. Lawton..... Reedsburg.....	A. P. Ellinwood, Reedsburg.
Shawano.....	Shawano County Agricultural Society.....	J. D. Kast..... Shawano.....	W. H. Murdock..... Shawano.....	L. Rollman, Shawano.
Sheboygan.....	Sheboygan County Agricultural Society.....	T. M. Blackstock..... Sheboygan.....	N. F. Pierce..... Sheboygan Falls.	W. C. Bode, Sheboygan Falls.
St. Croix.....	St. Croix County Agricultural Society.....	W. W. Lee..... Woodville.....	Wm. Bradley..... Hudson.....	W. S. Evans, Hudson.
Taylor.....	Taylor County Agricultural Society.....	C. C. Palmer..... Westboro.....	T. G. Jeffers..... Medford.....	E. T. Wheelock, Medford.
Trempealeau.....	Trempealeau County Agricultural Society.....	Joshua Rhodes..... Trempealeau.....	H. French..... Galesville.....	W. B. Thompson, Galesville.
Trempealeau.....	Arcadia Agricultural & Driving Park Association.	James Gavaney..... Arcadia.....	J. C. Radell..... Arcadia.....	John Durish, Arcadia.
Trempealeau.....	Trempealeau Co. Ind., Agr. & Div. Park Assoc.	D. Wood..... Whitehall.....	E. C. Getts..... Whitehall.....	E. N. Trowbridge, Whitehall.
Vernon.....	Vernon County Agricultural Society.....	E. Tilton..... Viroqua.....	O. B. Wyman..... Viroqua.....	E. Powell, Viroqua.
Walworth.....	Walworth County Agricultural Society.....	S. R. Edgerton..... Spring Prairie.....	Levi E. Allen..... Elkhorn.....	L. G. Latham, Elkhorn.
Waukesha.....	Waukesha County Agricultural Society.....	E. Beaumont..... Hartland.....	G. F. H. Barber..... Waukesha.....	E. Foster, Waukesha.
Waupaca.....	Waupaca County Agricultural Society.....	F. Conrad..... Weyauwega.....	W. Wood..... Weyauwega.....	D. Water, Weyauwega.
Washington.....	Washington County Agricultural Society.....	W. P. Rix..... West Bend.....	Jos. Ott..... West Bend.....	Geo. W. Jones, West Bend.
Wood.....	Wood County Agricultural Society.....	W. T. Jones..... Centralia.....	E. B. Bundage..... Grand Rapids.....	F. J. Wood, Grand Rapids.

REPORTS OF DEPARTMENT SUPERINTENDENTS.

DEPARTMENT A—HORSES.

The exhibit of horses at the last state fair was nicely distributed among the various classes of the department—all of the breeds classified being represented.

The Superintendent considers himself fortunate in the selection of judges, being satisfied that the popular verdict almost invariably sustained the justice of awards made.

Relations with exhibitors were pleasant without exception.

The Superintendent is satisfied that additional stall room will be required at our next exhibition, and would recommend that arrangements be made therefor.

He would also recommend that feed boxes be supplied and fixed in all stalls previous to the opening of the fair.

Believing that better and more satisfactory results will be reached by the use of single expert judges, instead of a committee of them, I would recommend that the Superintendent be allowed to secure three gentlemen to act singly as expert judges in this department.

Respectfully submitted.

JOHN M. TRUE,
Superintendent.

DEPARTMENT C—SHEEP.

Mr. President and Gentlemen of the Executive Committee—
As superintendent of Department C (Sheep), I would respectfully report that the display in this department was, I think, the largest ever made at a Wisconsin state fair. In round numbers there were some 400 sheep, (a large flock to provide for.) Of these, one-half were fine wools, of the remaining, thirty were Cotswolds, two Leicesters, the balance about evenly divided among the Downs. Very many of

these sheep lacked merit, they were brought to fill the classes and get premiums. I would suggest a change in this department. I would confine the exhibit to one animal in each class, with a sweepstakes class of four animals, and these thoroughbreds, recognized by the registries of the different breeds to which they belong.

Under the present ruling it takes thirty-two sheep to fill one class. Under my ruling it would take fifteen; while I would reduce the volume of the exhibit, I would add to its attractiveness by its quality. As there is but one breed, Merinos, to which is attached a grade class, I would suggest that that be dropped. Class 29, Leicesters, a breed that is nearly extinct, of which there are no records, a class that when it fills, fills with sheep of questionable ancestry, shown merely to get the premiums. I would advise dropping this class also. The object of this change is two fold: 1st. It is expensive to the breeder and injurious to his flock, to fit and handle so many sheep. 2nd. It is expensive to the society to provide accommodations and feed for so many.

At the January meeting of the Wisconsin Merino Sheep Breeders and Wool Growers Association, I proposed this change; after discussion it was unanimously voted to ask the state society to adopt it. I have conversed with breeders of some of the other classes, in every instance they have manifested a desire for the change.]

I would advise continuing the one judge plan, having them selected by the two associations, Merinos or Fine Wools, and the mutton or coarse wools, they being better able to decide who is competent to judge. To secure their attendance upon a certain day, the society to allow the department \$10 to pay the judges, by this means their services are secured; so far as I am informed the work in this department at the last fair was entirely satisfactory to all interested. I attribute it more to the system of judging than any other one thing.

All of which is respectfully submitted.

C. M. CLARK,
Superintendent Department C, Sheep.

DEPARTMENT D — SWINE.

The superintendent of the swine department, at the state fair, A. D. 1887, would report the number of swine on exhibition to be in excess of either of the two previous years; in fact the pens provided by the society which was considered ample for any number likely to be exhibited, were filled to their fullest capacity, and in many instances exhibitors were compelled to double up their stock to the great detriment of the exhibition.

There were on exhibition seventy-seven Poland Chinas, twenty-five Chester Whites, eight Victorias, sixty-six Berkshires, forty-one Essex—Suffolk, Small Yorkshires and Cheshires, in all 209.

The exhibition, so large in numbers, and represented by all the popular breeds, was of the highest merit in every particular.

The system of one judge was accepted by all the exhibitors, and as far as I was able to learn gave entire satisfaction.

I would recommend that in entry of "Breeding sow with sucking pigs," the list should be changed limiting the age of pigs to three months, and in sweepstakes, exhibitors in all cases to select the animals they wish to compete.

F. C. CURTIS.

Superintendent Swine Department.

DEPARTMENT E — POULTRY.

To the Officers and Executive Board of the Wisconsin State Agricultural Society:—

As superintendent of Department "E" for the year 1887, I respectfully make the following report, and beg leave to make the following recommendations or suggestions:

In my department there were about 300 entries at the last state fair, embracing nearly all of the most popular breeds of poultry.

The exhibition was undoubtedly the largest and best ever made at any previous state fair, and the want of room to properly arrange and exhibit the different varieties and breeds by themselves was an impossibility. Therefore I would suggest that the superintendent for 1888 be instructed to re-arrange the building for his department with a view of increasing the capacity or holding room and doing away with any obstructions to a free passage through the building. The same can be done at a very small cost.

I suggest that a new class be added to the list known as the "American" class, and that Plymouth Rocks, White Plymouth Rocks, Silver Wyandottes, White Wyandottes, Golden Wyandottes, Black Javas, Dominiques, Frizzlies and Langshan be therein placed.

Also that Rose-combed White Leghorns and Rose-combed Brown Leghorns and Minorcas be added to the "Spanish" list.

That Black turkeys and Narragansett turkeys be added to the proper list.

That pigeons be again placed on the list with first and second premiums for a showing of not less than ten pair in each coop.

It became necessary at the last fair to employ the services of an expert judge, and such good and general satisfaction was given that exhibitors were unanimous in opinion that the same course should be followed in the future. So I would recommend that the superintendent be authorized, on consulting exhibitors, to employ an expert judge for this department.

I wish here to return my thanks and gratitude to the officers of this association and also to the exhibitors in this department for the many acts of kindness and assistance during the last state fair, hoping that in all of the departments that we may be called to fill during life, the same good fellowship will always prevail.

Respectfully submitted,

WM. WILSON,

Superintendent Department "E."

DEPARTMENT G — FRUITS AND FLOWERS.

The outlook for a fine show of fruit and flowers was rather against us on account of the dry summer and heavy wind, but by a few postal cards directed and sent to our fruit and flower growers, and a visit to some of the Milwaukee florists, a very creditable show was made.

Some firms made very good shows but did not enter as competitors, and therefore I mention the Currie Brothers as they would not be mentioned in the Transactions unless they were reported. All the successful competitors are mentioned in the awards made, and quite a number of premiums were taken by parties out of our state; although a very good display of grapes came from Mr. Charles Greenman, of Minnesota, our state competitors were the victors as this was the best exhibit ever made since the organization of the Society in 1852, showing the dry and hot weather was just right to raise the grape.

The show of apples was very good, especially of the Russian varieties, owing to the large premiums offered for them; although only one exhibitor in the professional and two in the amateur list made those exhibits, it prompted them to save all the early varieties by means of refrigerators and ice. As high as eighty varieties were shown and *were very creditable*. Pears were fine raised by exhibitors near Lake Michigan, and a larger show would have been made but some of growers of these expressed themselves by saying the fruit was worth more than the small premiums offered for it even if the awards were taken, and would not bother to take it to the fair. Plums the same. I would recommend the offer of larger premiums on such fruits, as there are more and better fruits now growing of the hardy Russian sorts of Pears, Plums and Apricots.

GEO. P. PEFFER,

Assistant Superintendent Fruit and Flower Department.

DEPARTMENT H—AGRICULTURAL MACHINERY.

It needs only be said of the show in this department at the last annual fair of the Society, that it was fully equal, if not superior, to the exhibition in 1886, to give assurance that it was grandly attractive. Any attempt to present its various features, or to indicate its marvelous revelations of growth and progress, would be little more than to repeat what was presented in my report of last year.

There were exhibited by manufacturers in this department as follows: Mowers, 24; reapers, 5; binders, 14; portable and traction engines, 7; threshing machines, 6; feed cutters, 30; plows, 50; cultivators, 20; harrows, 14; clover huller, 1. The miscellaneous exhibits, together with those of agricultural warehouses, make up a long and attractive list.

In the exhibition of mowers, reapers and binders, twenty-one manufacturing companies were represented. The McCormick Harvesting Co. of Chicago led off with two binders, one centre draft mower, two light mowers, and one light reaper. It is unnecessary to say a word in commendation of these machines, either as to their make or work, for their reputation is world-wide. They made an interesting show.

Wm. Deering & Co. followed with a binder, reaper, giant mower, light mower, and one horse mower. These all spoke for themselves — their great merit is conceded.

The Esterly Harvester Co., of Whitewater, had on exhibition two folding steel binders and one mower. These machines have a widely established reputation.

As next on the list, mention is made of The Walter A. Wood Harvesting Machine Co., of Hoosic Falls, N. Y., who exhibited one each of reaper, binder and mower, for which they claim superiority in point of strength, durability, ease of draft, and rapid and clean work. There need be no hesitation in placing them, in these respects, alongside the machines already noticed.

In addition to those just mentioned, the following well-known and enterprising manufacturers had a fine show of

machines of various degrees of excellence: D. M. Osborne & Co., Auburn, N. Y.; Johnson Harvester Co., Batavia, N. Y.; Peerless Harvester Co., Milwaukee, Wis.; Plano Manufacturing Co., Plano, Ill.; D. S. Morgan & Co., Brockport, N. Y.; Stoddard Manufacturing Co., Dayton, Ohio; Eureka Mower Co., Utica, N. Y.; Warder, Bushnell & Glessner, Springfield, Ohio; Minneapolis Harvester Works, Minneapolis, Minn.; Wychoff & Parry, Perry, N. Y.

Of plows of various kinds, there was a magnificent exhibition, the following companies being represented: Rock Island Plow Co., Rock Island, Ill.; David Bradley Manufacturing Co., Chicago, Ill.; Fuller & Johnson Manufacturing Co., Madison, Wis.; J. I. Case Plow Works, Racine Wis.; Deere & Co.; South Bend Chilled Plow Co., South Bend, Ind.

The largest exhibitors in this class were the J. I. Case Plow Works, the Rock Island Plow Co., and the David Bradley Manufacturing Co.; they severally showing in their order, 17, 11 and 9 plows of various patterns, such as sulky, gang and walking plows, of several styles, and adapted to the many kinds of work required to be done by the plow on the farm.

The Northwestern Manufacturing & Car Co., of Stillwater, Minn., had on exhibition a portable engine and threshing machine; the Pitts Agricultural Works, Buffalo, N. Y., two portable engines and two threshing machines; M. Rumley, La Porte, Ind., a traction engine and threshing machine; the Linch Co., two portable engines, one traction engine and one threshing machine; the J. I. Case Threshing Machine Co., Racine, Wis., one traction engine and one threshing machine and separator.

In looking over these creations of inventive genius and mechanical skill, and witnessing their perfection of movement and work, one could but feel how difficult of award would be the palm of superiority.

Of cultivators, harrows, feed cutters, seeders, drills, horse rakes, fanning mills, hay tedders, hay carriers, feed steamers, wind mills, feed mills, hay presses, pumps, etc., there was a very large and fine display, in which the following manufacturers were represented; P. P. Mast & Co., Spring-

field, Ohio; S. L. Sheldon Co., Madison, Wis.; Mast, Foos & Co., Springfield, Ohio; Milford Cultivator Co., Milford, Mich.; H. C. Staull & Co., Chicago, Ill.; J. & P. Just, Sauk City, Wis.; Foos Manufacturing Co., Springfield, Ohio; Winship Manufacturing Co., Racine, Wis.; Appleton Manufacturing Co., Appleton, Wis.; Emerson, Talcott & Co., Rockford, Ill.; Van Brunt & Danes Co., Horicon, Wis.; Eclipse Wind Engine Co., Beloit, Wis.; James Little & Sons, Menasha, Wis.; U. S. Star Windmill Co., Delavan, Wis.; E. W. Rider Manufacturing Co. and Belle City Manufacturing Co., Racine, Wis.; A. Ingliss & Son, Horicon, Wis.; Stover Manufacturing Co., Freeport, Ill.; D. C. & H. C. Reed, Kalamazoo, Mich.; G. A. Field, Milwaukee, Wis.; W. C. Downey & Co., Springfield, Ohio; Freeman & Son, Racine, Wis.; O. C. Vaughn, Jefferson, Wis.; Janesville Machine Co., Janesville, Wis.; Peter Fischer & Co.; Smalley Manufacturing Co., Manitowoc, Wis.; Meyer & Schraze, Sheboygan, Wis.; B. H. & J. Sanford, Sheboygan Falls, Wis.; J. Dorsch & Son, Milwaukee, Wis.

It is but just that I here make prominent mention of the very creditable display made by Lindsay Bros., Dorsch & Hirsch, C. Cribb, and Chas. Knoblock, of Milwaukee, of every kind of agricultural goods, they being state agents for the manufacturers of the same. Nothing, scarcely, in the line of farm machinery seemed to be wanting to make the show complete.

The Graham Pump Co., of Rockford, Ill., had thirty iron pumps, of various styles and sizes on exhibition. A very fine display.

S. L. Allen, of Philadelphia, is to be credited for a large and attractive display of garden implements, known as "Planet, Jr.," consisting of seed drills, cultivators, horse hoes, etc.

As I went about amongst the immense aggregation of machinery, to which only briefest notice has been given, I could but be struck with the fact, even on a cursory survey, that an increasing knowledge of agricultural dynamics obtains among manufacturers, as seen notably, in the construction of reapers and mowers. Great weight and clumsiness

have given place, and more and more are giving place, to lightness combined with strength at those points where only strength is required. The contrast between the symmetrical and light-moving machines of to day, with their perfection of movement and work, are in broad and striking contrast with the awkward and hard-going machines of thirty and even twenty years ago. No doubt there is room for other and great improvements, and these will be made as the laws of force and motion come to be better understood.

It may not be out of place for me to mention in concluding this report, that several of our largest manufacturing companies, among them the Milwaukee Harvester Co., have signified their intention to erect permanent buildings for the show of their goods as soon as the society shall permanently locate the fair on grounds of its own.

I have again to thank exhibitors and their gentlemanly agents for their many courtesies, and also my assistants for their valuable services.

Respectfully submitted,

A. W. VAUGHN,

Superintendent.

DEPARTMENT K — FINE ARTS.

To the Honorable Board of State Agricultural Society:

GENTLEMEN:—Your superintendent of Fine Art department begs leave to report that the display in this department was the best and finest since I have been connected with the society. One of the serious difficulties was a want of space to make a suitable display. Your superintendent would further recommend some better and more suitable space for the display of paintings and work of this class. We have within our state a number of artists that are taking an interest in our state fair, and should be encouraged in this work. Our display would have been larger if we had had space for same.

Respectfully,

M. R. DOYON,

Superintendent Fine Arts.

LIST OF AWARDS AT STATE FAIR, 1887.

DEPARTMENT A—HORSES.

CLASS 1—*Heavy Draft Horses—Percherons.*

Best stallion 4 years old and over, Fred Pabst, Milwaukee.....	\$30 00
Second best, Fred Pabst, Milwaukee.....	15 00
Best stallion 3 years old and under 4, A. Vesper, Rolling Prairie..	25 00
Best stallion 2 years old and under 3, W. M. Ormand, Milwaukee	20 00
Second best, Dillon Bros., Normal, Ill.....	10 00
Best stallion 1 year old and under 2, Fred Pabst, Milwaukee.....	15 00
Second best, Rufus B. Kellogg, Green Bay.....	10 00
Best stallion colt under 1 year, Fred Pabst, Milwaukee.....	15 00
Second best, Fred Pabst, Milwaukee.....	8 00
Best mare 4 years old and over, Dillon Bros., Normal, Ill.....	25 00
Second best, Dillon Bros., Normal Ill.....	15 00
Best mare 3 years old and under 4, Dillon Bros., Normal, Ill.....	20 00
Second best, A. Vesper, Rolling Prairie.....	10 00
Best mare 2 years old and under 3, Dillon Bros., Normal, Ill.....	15 00
Second best, Rufus B. Kellogg, Green Bay.....	8 00
Best filly one year old and under 2, Dillon Bros., Normal, Ill.....	15 00
Second best, Fred Pabst, Milwaukee.....	8 00
Best filly under 1 year, Fred Pabst, Milwaukee.....	12 00
Second best, Fred Pabst, Milwaukee.....	6 00

Breeding Ring.

Best stallion as shown by five of his colts under 4 years, Fred Pabst, Milwaukee.....	Gold Medal
Best brood mare as shown by two of her colts under 4 years, Fred Pabst, Milwaukee.....	Gold Medal
American Percheron Horse Breeders' Association, challenge Gold Medal, for best pure bred Percheron stallion, bred in Wisconsin, Rufus B. Kellogg, Green Bay.	

CLASS 2—*Clydesdales.*

Best stallion 4 years old and over, Dr. Valerius & Co., Watertown.	\$30 00
Second best Galbraith Bros., Janesville.....	15 00
Best stallion 3 years old and under 4, Griffith Richards, Cambria.	25 00
Second best Galbraith Bros., Janesville.....	12 00
Best stallion 2 years old and under 3, Robert Ogilvie, Madison....	20 00
Second best, Galbraith Bros., Janesville.....	10 00
Best stallion 1 year old and under 2, A. Z. Blodgett, Waukegan..	8 00
Best stallion colt under 1 year, George Stroup, Lamartine.....	8 00

Best mare 4 years old and over, Galbraith Bros., Janesville	\$25 00
Second best, Robert Ogilvie, Madison	12 00
Best mare 2 years old and under 3, Robert Ogilvie, Madison	8 00
Best filly 1 year old and under 2, George Stroup, Lamartine	8 00
Best filly under 1 year old, Galbraith Bros., Janesville	6 00
Best brood mare, as shown by 2 of her colts under 4 years of age, Galbraith Bros., Janesville	Gold Medal.
American Clydesdale Association, Gold Medal for best recorded Clydesdale stallion, Griffith Richards, Cambria.	
American Clydesdale Association, Gold Medal for best recorded Clydesdale mare, Galbraith Bros., Janesville.	

CLASS 3 — *English Shire.*

Best stallion 4 years old and over, Robert Ogilvie, Madison	\$30 00
Second best, Galbraith Bros., Janesville	15 00
Best stallion 3 years old and under 4, Galbraith Bros., Janesville	25 00
Second best, Galbraith Bros., Janesville	12 00
Best stallion 2 years old and under 3, Galbraith Bros., Janesville	20 00
Second best, Taylor & Nelson, Milwaukee	10 00
Best stallion 1 year old and under 2, Galbraith Bros., Janesville	8 00
Best mare 3 years old and under 4, James Hopkins & Son, Evansville	10 00

CLASS 4 — *Other Pure Bred Draft Horses not included in Classes 1, 2 and 3.*

Best stallion 4 years old and over, Galbraith Bros., Janesville	\$30 00
Second best, Dillon Bros., Normal, Ill.	15 00
Best stallion 3 years old and under 4, Dillon Bros., Normal, Ill.	12 00
Best stallion 2 years old and under 3, Dillon Bros., Normal, Ill.	10 00
Best stallion 1 year old and under 2, Dillon Bros., Normal, Ill.	15 00
Second best, Dillon Bros., Normal, Ill.	8 00
Best stallion colt under 1 year, Dillon Bros., Normal, Ill.	8 00
Best mare 4 years old and over, Dillon Bros., Normal, Ill.	25 00
Second best, Dillon Bros., Normal, Ill.	12 00
Best mare 3 years old and under 4, Dillon Bros., Normal, Ill.	10 00
Best mare 2 years old and under 3, Dillon Bros., Normal, Ill.	15 00
Second best, Dillon Bros., Normal, Ill.	8 00
Best mare 1 year old and under 2, Dillon Bros., Normal, Ill.	15 00
Second best, Dillon Bros., Normal, Ill.	8 00
Best brood mare as shown by two of her colts under 4 years, Dillon Bros., Normal, Ill.	Gold Medal

CLASS 5 — *Cleveland Bays.*

Best Stallion 4 years old and over, Geo. Warren & Sons, Fox Lake	\$15 00
Best stallion 3 years and under 4 Galbraith Bros., Janesville	25 00
Second best, Geo. Warren & Sons, Fox Lake	12 00
Best stallion 2 years old and under 3, Galbraith Bros., Janesville	20 00
Second best, Galbraith Bros., Janesville	10 00

CLASS 6 — *French Coach.*

Best stallion 4 years old and over, Dr. Valerius & Co., Watertown	\$15 00
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CLASS 7 — *Trotting Horses.*

Best stallion 4 years old and over, Griffith Richards, Cambria.....	\$30 00
Second best, J. W. Graves, Hudson.....	15 00
Best stallion 3 years old and under 4, James Bolton, Racine.....	25 00
Second best, W. H. Hardy, Genesee.....	12 00
Best stallion 2 years and under 3, L. Downs, Allen's Grove.....	20 00
Second best, Dr. Valerius & Co., Watertown.....	10 00
Best stallion 1 year old and under 2, J. A. Gilman, Sparta.....	15 00
Second best, W. M. Ormond, Milwaukee.....	8 00
Best mare 4 years old and over, Frank A. Waters, Genoa Junction..	25 00
Second best, J. A. Gilman, Sparta.....	12 00
Best mare 3 years old and under 4, James Bolton, Racine.....	20 00
Second best, William Ferrick, Butler.....	10 00
Best mare 2 years old and under 3, Jas E. Corrigan, Milwaukee....	15 00
Second best, S Y Cameron, Milwaukee.....	8 00
Best mare 1 year old and under 2, Griffith Richards, Cambria.....	8 00
Best filly under 1 year old, J. A. Gilman, Sparta.....	12 00
Second best, J. A. Gilman, Sparta.....	6 00
Best breeding stallion as shown by five of his colts under 4 years, J. A. Gilman, Sparta.....	Gold Medal
Best brood mare as shown by two of her colts under four years, J. A. Gilman, Sparta.....	Gold Medal

CLASS 8 — *Grade Draft.*

Best pair mares or geldings, E. B Thomas, Dodge's Corners.....	\$30 00
Best mare or gelding 4 years old and over, Geo. Klein, Fort Atkin- son.....	12 00
Second best, Dillon Bros., Normal, Ill.....	6 00
Best mare or gelding 3 years and under 4, Geo. Klein, Fort Atkinson	6 00
Best sucking colt, W. L. Gilbert, Prospect.....	5 00
Galbraith challenge silver cup for best pair grade draft horses or mares bred in Wisconsin, sired by imported Clydesdale or English Saire, Geo. Klein, Ft. Atkinson.	

CLASS 9 — *Farm Horses.*

Best brood mare and two of her colts, Dillon Bros., Normal, Ill.....	\$30 00
Second best, D. T. Pilgrim, Wauwatosa.....	10 00
Best mare or gelding, 4 years old and over, D. T. Pilgrim, Wau- watosa.....	12 00
Best mare or gelding, 3 years old and under 4, D. T. Pilgrim, Wau- watosa.....	12 00
Best filly or gelding 2 years old and under 3, D. T. Pilgrim, Wau- watosa.....	10 00
Best filly or gelding 1 year old and under 2, D. T. Pilgrim, Wauwa- tosa.....	15 00
Second best, D. T. Pilgrim, Wauwatosa.....	10 00
Best colt under 1 year, D. T. Pilgrim, Wauwatosa.....	10 00

CLASS 10 — *Matched Horses and Roadsters.*

Best pair matched carriage horses, H. L. Stoltz, Milwaukee.....	\$25 00
Second best, Chas. Remus, Columbus.....	12 00
Best single carriage horse or mare, C. H. Shaw, Milwaukee.....	20 00
Second best, J. W. Flack, Milwaukee.....	10 00
Best pair roadsters, H. D. McKinnev, Janesville.....	15 00
Second best, E. P. Matthews, Milwaukee.....	8 00
Best single roadster, W. H. Potter, Farmington.....	10 00
Second best, A. J. Atwood, Milwaukee.....	5 00
Best saddl. horse, J. G. Boyd, Milwaukee.....	25 00
Second best, C. C. Hendea, Milwaukee.....	15 00
Third best, B. Human, Wauwatosa.....	10 00

DEPARTMENT B — CATTLE.

CLASS 12.—*Short-horns.*

Best bull 3 years old and over, 7 entries, Stilson Bros., Oshkosh....	\$20 00
Second best, Seth Fisher, Center.....	15 00
Third best, J. M. Scoville, Lowville.....	8 00
Best bull 2 years and under 3, 4 entries, W. Jacobs, Jr., Madison...	20 00
Second best, Stilson Bros., Oshkosh.....	15 00
Third best, C. M. Sanger, Milwaukee.....	8 00
Best bull 1 year old and under 2, 5 entries, Seth Fisher, Center....	15 00
Second best, W. Jacobs, Jr., Madison.....	10 00
Third best, George Harding, Waukesha.....	5 00
Best bull calf over 6 and under 12 months, 8 entries, Stilson Bros., Oshkosh.....	10 00
Second best, C. M. Sanger, Milwaukee.....	8 00
Third best, J. M. Scoville, Lowville.....	5 00
Best bull calf under 6 months, 5 entries, Geo. Harding, Waukesha.	8 00
Second best, J. M. Scoville, Lowville.....	5 00
Third best, Stilson Bros., Oshkosh.....	3 00
Best cow 3 years and over, 11 entries, Stilson Bros., Oshkosh.....	20 00
Second best, W. Jacobs, Jr., Madison.....	15 00
Third best, Geo. Harding, Waukesha.....	8 00
Best cow, 2 years and under 3, 9 entries, W. Jacobs, Jr., Madison..	20 00
Second best, W. Jacobs, Jr., Madison.....	15 00
Third best, Stilson Bros., Oshkosh.....	8 00
Best heifer 1 year and under 2, 10 entries, Stilson Bros., Oshkosh..	15 00
Second best, W. Jacobs, Jr., Madison.....	10 00
Third best, Seth Fisher, Center.....	5 00
Best heifer calf over 6 and under 12 months, 8 entries, W. Jacobs, Jr., Madison.....	10 00
Second best, Stilson Bros., Oshkosh.....	8 00
Third best, Stilson Bros., Oshkosh.....	5 00
Best heifer calf under 6 months, 6 entries, Seth Fisher, Center.....	8 00
Second best, Stilson Bros., Oshkosh.....	5 00
Third best, J. M. Scoville, Lowville.....	3 00
Best herd of Short horns, consisting of bull 2 years old or over, cow 3 years old or over, heifer 2 years old and under 3, heifer 1 year old and under 2, heifer under 1 year, 5 entries, W. Ja- cob's, Jr., Madison.....	40 00
Second best, Stilson Bros., Oshkosh.....	25 00
Third best, Geo. Harding, Waukesha.....	15 00

Sweepstakes.

Best bull of any age, 7 entries, W. Jacobs, Jr., Madison.....	\$25 00
Best cow of any age, 10 entries, W. Jacobs, Jr., Madison.....	25 00

CLASS 13.—*Jerseys.*

Best bull 3 years old and over, 4 entries, T. L. Hacker & Co., Madison	\$20 00
Second best, Chas. Cupple, Milwaukee.....	15 00
Third best, D. H. Brace, Fall River.....	8 00
Best bull 2 years old and under 3, 6 entries, T. L. Hacker & Co., Madison.....	20 00
Second best, C. N. Griffith, Whitewater.....	15 00
Third best, C. N. Griffith, Whitewater.....	8 00
Best bull 1 year old and under 2, 3 entries, R. S. Kingman, Sparta..	15 00
Second best, H. S. Durand, Racine.....	10 00
Best bull calf over 6 and under 12 months, 2 entries, T. L. Hacker & Co., Madison.....	10 00
Second best, R. S. Kingman, Sparta.....	8 00
Best bull calf under 6 months old, 7 entries, T. L. Hacker & Co., Madison.....	8 00
Second best, T. L. Hacker & Co., Madison.....	5 00
Third best, R. S. Kingman, Sparta.....	3 00
Best cow 3 years old and over, 22 entries, Chas. Cupple, Milwaukee.	20 00
Second best, R. S. Kingman, Sparta.....	15 00
Third best, T. L. Hacker & Co., Madison.....	8 00
Best cow 2 years old and under 3, 9 entries, C. N. Griffith, Whitewater.....	20 00
Second best, I. L. Hoover, Clinton.....	15 00
Third best, H. S. Durand, Racine.....	8 00
Best heifer 1 year and under 2, 11 entries, T. L. Hacker & Co., Madison.....	15 00
Second best, Chas. Cupple, Milwaukee.....	10 00
Third best, H. S. Durand, Racine.....	5 00
Best heifer calf over 6 and under 12 months, 7 entries, Chas. Cupple, Milwaukee.....	10 00
Second best, I. L. Hoover, Clinton.....	8 00
Third best, D. H. Brace, Fall River.....	5 00
Best heifer calf under 6 months, 9 entries, T. L. Hacker, Madison..	8 00
Second best, C. N. Griffith, Whitewater.....	5 00
Third best, Chas. Cupple, Milwaukee.....	3 00
Best herd of Jerseys, to consist of bull 2 years old and over, cow 3 years or over, heifer 2 years and under 3; heifer 1 year and under 2; heifer under 1 year, 7 entries, T. L. Hacker, Madison.....	40 00
Second best, C. N. Griffith, Whitewater.....	25 00
Third best, H. S. Durand, Racine.....	15 00

Sweepstakes.

Best bull of any age, 11 entries T. L. Hacker & Co., Madison.....	\$25 00
Best cow of any age, 19 entries, R. S. Kingman, Sparta.....	25 00
Special premium by American Jersey Cattle Club — For best herd of Jerseys consisting of one male and four females, R. S. Kingman, Sparta.....	\$100

CLASS 14—*Devons.*

Best bull 3 years old and over, 4 entries, Geo. Baker & Son, Hustisford	\$20 00
Second best, L. Rawson & Son, Oak Creek	15 00
Third best, Geo. Baker & Son, Hustisford	8 00
Best bull 2 years and under 3, 3 entries, L. Rawson & Co., Oak Creek	20 00
Second best, Geo. Baker & Son, Hustisford	15 00
Best bull 1 year and under 2, 4 entries, Geo. Baker & Son, Hustisford	15 00
Second best, Geo. Baker & Son, Hustisford	10 00
Third best, L. Rawson & Son, Oak Creek	5 00
Best bull calf over 6 and under 12 months, 4 entries, L. Rawson & Son, Oak Creek	10 00
Second best, Geo. Baker & Son, Hustisford	8 00
Third best, Geo. Baker & Son, Hustisford	5 00
Best bull calf under 6 months old, 4 entries, Geo. Baker & Son, Hustisford	8 00
Second best, Geo. Baker & Son, Hustisford	5 00
Best cow three years and over, 7 entries, L. Rawson & Son, Oak Creek	20 00
Second best, Geo. Baker & Son, Hustisford	15 00
Third best, Geo. Baker & Son, Hustisford	8 00
Best cow 2 years and under 3, 5 entries, L. Rawson & Son, Oak Creek	20 00
Second best, Geo. Baker & Son, Hustisford	15 00
Third best, Geo. Baker & Son, Hustisford	8 00
Best heifer, 1 year and under 2, 5 entries, Geo. Baker & Son, Hustisford	15 00
Second best, Geo. Baker & Son, Hustisford	10 00
Third best, L. Rawson & Son, Oak Creek	5 00
Best heifer calf over 6 and under 12 mos., 5 entries, Geo. Baker & Son, Hustisford	10 00
Second best, Geo. Baker & Son, Hustisford	8 00
Third best, L. Rawson & Son, Oak Creek	5 00
Best heifer calf under 6 months, 3 entries, Geo. Baker & Son, Hustisford	8 00
Second best, Geo. Baker & Son, Hustisford	5 00
Best herd of Devons, consisting of: bull 2 years old or over, cow 3 years or over, heifer 2 years old and under 3, heifer 1 year old and under 2, heifer under 1 year, 4 entries, L. Rawson & Son, Oak Creek	40 00
Second best, Geo. Baker & Son, Hustisford	25 00
Third best, Geo. Baker & Son, Hustisford	15 00

Sweepstakes.

Best bull any age, 4 entries, Geo. Baker & Son, Hustisford	\$25 00
Best cow any age, 3 entries, Geo. Baker & Son, Hustisford	25 00

CLASS 15—*Holsteins.*

Best bull 3 years old and over, 7 entries, Gillett & Moore; Rosendale	\$20 00
Second best, Henry Stelloh, Milwaukee	15 00
Third best, J. E. Hickey, Whitewater	8 00

Best bull 2 years old and over, 2 entries, Gillett & Moore, Rosendale.	\$20 00
Second best, J. E. Hickey, Whitewater.	15 00
Best bull 1 year old and under 2, 1 entry, Randall Bros., Hustisford.	10 00
Best bull calf over 6 and under 12 months, 2 entries, Rust Bros., North Greenfield.	8 00
Second best, Rust Bros., North Greenfield.	5 00
Best bull calf under 6 months, 4 entries, Gillett & Moore, Rosendale.	8 00
Second best, Rust Bros., North Greenfield.	5 00
Third best, Henry Stelloh, Milwaukee.	3 00
Best cow 3 years old and over, 9 entries, Gillett & Moore, Rosendale.	20 00
Second best, Rust Bros., North Greenfield.	15 00
Third best, Henry Stelloh, Milwaukee.	8 00
Best cow 2 years old and under 3, 5 entries, Gillett & Moore, Rosendale.	20 00
Second best, Rust Bros., North Greenfield.	15 00
Third best, Randall Bros., Hustisford.	8 00
Best heifer 1 year old and under 2, 9 entries, Gillett & Moore, Rosendale.	15 00
Second best, Rust Bros., North Greenfield.	10 00
Third best, Randall Bros., Hustisford.	5 00
Best heifer calf over 6 and under 12 months, 4 entries, Rust Bros., North Greenfield.	10 00
Second best, Henry Stelloh, Milwaukee.	8 00
Third best, Gillett & Moore, Rosendale.	5 00
Best heifer calf under 6 months old, 6 entries, Rust Bros., North Greenfield.	8 00
Second best, J. E. Hickey, Whitewater.	5 00
Third best, Henry Stelloh, Milwaukee.	3 00
Best herd, consisting of bull 2 years or over, cow 3 years old or over, heifer 2 years old and under 3, heifer 1 year old and under 2, heifer under 1 year old, 3 entries, Gillett & Moore, Rosendale.	40 00
Second best, Randall Bros., Hustisford.	25 00
Third best, Gillett & Moore, Rosendale.	15 00

Sweepstakes.

Best bull of any age, 8 entries, Gillett & Moore, Rosendale.	\$25 00
Best cow of any age, 6 entries, Henry Stelloh, Milwaukee.	25 00

CLASS 16 — *Guernseys and Brown Swiss.*

Best bull 2 years and under 3, J. I. Clapp, Kenosha, second money.	\$15 00
Best bull 1 year and under 2, J. I. Clapp, Kenosha.	15 00
Second best, G. E. Gordon, Milwaukee.	10 00
Best bull calf over 6 and under 12 months, G. E. Gordon, Milwaukee.	10 00
Second best, J. I. Clapp, Kenosha.	8 00
Best bull calf under 6 months, J. I. Clapp, Kenosha.	5 00
Best cow 3 years and over, G. E. Gordon, Milwaukee.	20 00
Second best J. I. Clapp, Kenosha.	15 00
Third best, G. E. Gordon, Milwaukee.	8 00
Best cow 2 years and under 3, J. I. Clapp, Kenosha.	20 00
Second best, G. E. Gordon, Milwaukee.	15 00
Third best, J. I. Clapp, Kenosha.	8 00
Best heifer 1 year and under 2, J. I. Clapp, Kenosha.	15 00
Second best, G. E. Gordon, Milwaukee.	10 00
Third best, F. W. Tratt, Whitewater.	5 00

Best heifer calf over 6 and under 12 months, F. W. Tratt, Whitewater	\$10 00
Second best, F. W. Tratt, Whitewater	8 00
Third best, G. E. Gordon, Milwaukee	5 00
Best heifer calf under 6 months, F. W. Tratt, Whitewater	5 00
Best herd of Guerneys or Brown Swiss to consist of bull 2 years old or over, cow 3 years old and over, heifer 2 years old and under 3, heifer 1 year old and under 2, heifer under 1 year. F. W. Tratt, Whitewater	25 00

Sweepstakes.

Best bull of any age, J. I. Clapp, Kenosha	\$25 00
Best cow of any age, G. E. Gordon, Milwaukee	25 00

CLASS 17—Ayrshires.

Best bull 3 years old and over, Chester Hazen, Brandon	\$15 00
Best bull 2 years and under 3, Chester Hazen, Brandon	15 00
Best bull 1 year and under 2, Chester Hazen, Brandon	10 00
Best cow 3 years and over, Chester Hazen, Brandon	15 00
Second best, Chester Hazen, Brandon	8 00
Best cow 2 years old and under 3, Chester Hazen, Brandon	15 00
Second best, Chester Hazen, Brandon	8 00
Best heifer 1 year and under 2, Chester Hazen, Brandon	10 00
Second best, Chester Hazen, Brandon	5 00
Best heifer calf over 6 months and under 12 months, Chester Hazen, Brandon	8 00
Second best, Chester Hazen, Brandon	5 00
Best heifer calf under 6 months, Chester Hazen, Brandon	5 00
Second best, Chester Hazen, Brandon	3 00
Best herd of Ayrshires, to consist of bull 2 years old or over, cow 3 years old or over, heifer 2 years old and under 3, heifer 1 year old and under 2, heifer under 1 year, Chester Hazen, Brandon	25 00
Second best, Chester Hazen, Brandon	15 00

Sweepstakes.

Best bull of any age, Chester Hazen, Brandon	\$25 00
Best cow of any age, Chester Hazen, Brandon	25 00

CLASS 18.—Galloways and Polled Angus or Polled Norfolks.

Best bull calf over 6 months and under 12 months, I. L. Hoover, Clinton	\$8 00
Best cow 3 years and over, I. L. Hoover, Clinton	15 00
Best cow of any age, I. L. Hoover, Clinton	25 00

CLASS 19 — *Herefords.*

Best bull 3 years old and over, Annandale Live Stock Co., Ripon..	\$20 00
Second best, Annandale Live Stock Co., Ripon.....	15 00
Third best, Annandale Live Stock Co., Ripon.....	8 00
Best bull 2 years and under 3, Annandale Live Stock Co., Ripon....	20 00
Second best, J. J. Williams, Berlin.....	15 00.
Third best, Annandale Live Stock Co., Ripon.....	8 00
Best bull 1 year and under 2, Annandale Live Stock Co., Ripon....	15 00
Second best, Annandale Live Stock Co., Ripon.....	10 00
Best bull calf over 6 months and under 12 months, Annandale Live Stock Co.....	8 00
Best bull calf under 6 months, J. J. Williams, Berlin.....	5 00
Best cow 3 years and over, J. J. Williams, Berlin.....	20 00
Second best, Annandale Live Stock Co.....	15 00
Best cow 2 years and under 3, J. J. Williams, Berlin.....	20 00
Second best, Annandale Live Stock Co.....	15 00
Best heifer 1 year and under 2, J. J. Williams, Berlin.....	15 00
Second best, Annandale Live Stock Co.....	10 00
Best heifer calf over 6 and under 12 months, J. J. Williams, Berlin.	10 00
Second best, Annandale Live Stock Co.....	8 00
Best heifer calf under 6 months, J. J. Williams, Berlin.....	8 00
Second best, J. J. Williams, Berlin.....	5 00
Best herd of Herefords, to consist of bull 2 years old or over, cow 3 years old or over, heifer 2 years old and under 3, heifer 1 year old and under 2, heifer under 1 year, Annandale Live Stock Co., Ripon.....	40 00
Second best, J. J. Williams, Berlin.....	25 00

Sweepstakes.

Best bull of any age, J. J. Williams, Berlin....	\$25 00	†
Best cow of any age, Annandale Live Stock Co.....	25 00	†

CLASS 20 — *Fat Cattle.*

Best single head fat cattle, Jas. H. Foster, Mitchell, Dak.....	15 00
Second best, Geo Harding, Waukesha.....	10 00
Third best, J. J. Williams, Berlin.....	5 00
Best steer or heifer under 4 years old, Seth Fisher, Center.....	15 00
Best pure bred breeding cow for butter, R. S Kingman, Sparta.....	10 00
Best pure bred breeding cow for beef, W Jacobs, Jr., Madison.....	10 00
Special premium of 500 pounds of Royal Stock Food Cattle Cake for best 5 spring calves of 1887, any beef breed, herd to consist of 1 bull and 4 heifers, Geo. Baker & Sons, Hustisford. ✓	

DEPARTMENT C—SHEEP.

CLASS 23—*American Merino.*

Best ram, 2 years old and over, J. N. Crawford, Mukwanago	\$12 00
Second best, R. H. Mill, Palmyra	9 00
Best ram 1 year and under 2, R. H. Mill, Palmyra	12 00
Second best, Geo. H. Pitcher, Eagle	9 00
Best pen 3 ram lambs, J. N. Crawford, Mukwanago	10 00
Second best, Geo. H. Pitcher, Eagle	6 00
Best pen 3 ewes, 2 years and over, J. N. Crawford, Mukwanago	12 00
Second best, R. H. Mills, Palmyra	9 00
Best pen 3 ewes, 1 year and under 2, J. N. Crawford, Mukwanago ..	12 00
Second best, R. H. Mill, Palmyra	9 00
Best pen 3 ewe lambs, J. N. Crawford, Mukwanago	10 00
Second best, Geo. H. Pitcher, Eagle	6 00
Best ram and five of his get, R. H. Mill, Palmyra	10 00

CLASS 24—*American Merinos, and all others not enumerated or eligible in Class 23.*

Best ram 2 years old and over, Samuel A. Jones, Hustisford	\$12 00
Second best, Geo. Baker & Son, Hustisford	9 00
Best ram 1 year old and under 2, Samuel A. Jones, Hustisford	12 00
Second best, Perry Craig, Caldwell	9 00
Best pen 3 ram lambs, Perry Craig, Caldwell	10 00
Second best, A. H. Craig, Caldwell	6 00
Best pen 3 ewes 2 years and over, Perry Craig, Caldwell	12 00
Second best, A. H. Craig, Caldwell	9 00
Best pen 3 ewes 1 year and under 2, Perry Craig, Caldwell	12 00
Second best, Geo. H. Pitcher, Eagle	9 00
Best pen ewe lambs, A. H. Craig, Caldwell	10 00
Second best, Perry Craig, Caldwell	6 00
Best ram and 5 of his get, Perry Craig, Caldwell	10 00

CLASS 25—*Oxford Downs.*

Best ram 2 years and over, J. E. Powis, Wayne, Ill	\$12 00
Second best, Chas. Collard, Edmund	9 00
Best ram 1 year and under 2, J. E. Powis, Wayne, Ill	12 00
Second best, J. E. Powis, Wayne, Ill	9 00
Best pen 3 ram lambs, J. E. Powis, Wayne, Ill	10 00
Second best, Geo. McKerrow, Sussex	6 00
Best pen 3 ewes 2 years old and over, J. E. Powis, Wayne, Ill	12 00
Second best, J. E. Powis, Wayne, Ill	9 00
Best pen 3 ewes 1 year and under 2, J. E. Powis, Wayne, Ill	12 00
Second best, C. M. Sanger, Milwaukee	9 00
Best pen 3 ewe lambs, J. E. Powis, Wayne, Ill	10 00
Second best, Geo. McKerrow, Sussex	6 00
Best ram and 5 of his get, J. E. Powis, Wayne, Ill	10 00
Silver medal awarded by the American Oxford Down Sheep Record Association to the best pen of five registered Oxfords, to consist of one ram and four ewes owned by exhibitor residing in Wisconsin, C. M. Sanger, Milwaukee.	

CLASS 26 — *Cotswolds.*

Best ram 2 years and over, John Long, Waukegan, Ill.....	\$12 00
Second best, Eugene Gillett, Western Union.....	9 00
Best ram 1 year and under 2, George Harding, Waukesha.....	12 00
Second best, Geo. Harding, Waukesha.....	9 00
Best pen 3 ram lambs, Geo. Harding, Waukesha.....	10 00
Second best, Eugene Gillett, Western Union.....	6 00
Best pen 3 ewes 2 years and over, Geo. Harding, Waukesha.....	12 00
Second best, Geo. Harding, Waukesha.....	9 00
Best pen 3 ewes 1 year and under 2, Geo. Harding, Waukesha.....	12 00
Second best, Eugene Gillett, Western Union.....	9 00
Best pen 3 ewe lambs, Eugene Gillett, Western Union.....	10 00
Second best, Geo. Harding, Waukesha.....	6 00
Best ram with 5 of his get, Geo. Harding, Waukesha.....	10 00

CLASS 27 — *Southdowns.*

Best ram 2 years and over, Chas. Hill, Brookfield.....	\$12 00
Second best, Chas. Hill, Brookfield.....	9 00
Best ram 1 year and under 2, Geo. H. Daubner, Brookfield.....	12 00
Second best, L. Rauson & Son, Oak Creek.....	9 00
Best pen 3 ram lambs, Geo. H. Daubner, Brookfield.....	10 00
Second best, Geo. H. Daubner, Brookfield.....	6 00
Best pen 3 ewes 2 years and over, Geo. H. Daubner, Brookfield.....	12 00
Second best, Chas. Hill, Brookfield.....	9 00
Best pen 3 ewes 1 year and under 2, Chas. Hill, Brookfield.....	12 00
Second best, Geo. H. Daubner, Brookfield.....	9 00
Best pen 3 ewe lambs, L. Rauson & Son, Oak Creek.....	10 00
Second best, Geo. H. Daubner, Brookfield.....	6 00
Best ram and 5 of his get, Chas. Hill, Brookfield.....	10 00

CLASS 28 — *Shropshires.*

Best ram 2 years and over, John Long, Waukegan, Ill.....	\$12 00
Second best, Chas. Collard, Edmund.....	9 00
Best ram 1 year and under 2, John Long, Waukegan, Ill.....	12 00
Second best, J. D. Cass, Beloit.....	9 00
Best pen 3 ram lambs, J. D. Cass, Beloit.....	10 00
Second best, John Long, Waukegan, Ill.....	6 00
Best pen, 3 ewes, 2 years and over, John Long, Waukegan, Ill.....	\$12 00
Second best, Chas. Collard, Edmund.....	9 00
Best pen, 3 ewes, 1 year and under 2, John Long, Waukegan, Ill.....	9 00
Best pen, 3 ewe lambs, Chas. Collard, Edmund.....	6 00
Best ram with 5 of his get, John Long, Waukegan, Ill.....	10 00

CLASS 29 — *Leicesters.*

Best ram 2 years and over, John Long, Waukegan, Ill.,.....	\$12 00
Second best, Geo. McKerrow, Sussex.....	9 00
Best pen 3 ewes, 2 years and over, Geo. McKerrow, Sussex.....	9 00
Best pen 3 ewes, 1 year and under 2, John Long, Waukegan, Ill.....	12 00
Second best, Geo. McKerrow, Sussex.....	9 00
Best pen 3 ewe lambs, Geo. McKerrow, Sussex.....	6 00
Best ram and 5 of his get, George McKerrow, Sussex.....	10 00

DEPARTMENT D — SWINE.

CLASS 30 — *Poland China.*

Best boar 2 years old and over, E. Wait & Son, La Grange.....	\$15 00
Second best, B. T. Fowler, Whitewater.....	10 00
Best boar 1 year and under 2, E. Wait & Son, La Grange.....	12 00
Second best, J. E. Welch, Waukesha.....	8 00
Best breeding sow, 2 years and over, B. T. Fowler, Whitewater.....	15 00
Second best, W. L. Glass, Hebron Ill.....	10 00
Best breeding sow 1 year and under 2, J. E. Welch, Waukesha.....	12 00
Second best, E. Wait & Son, La Grange.....	8 00
Best breeding sow with litter of sucking pigs not less than 4, E. Wait & Son, La Grange.....	15 00
Second best, J. E. Welch, Waukesha.....	10 00
Best boar pig over 6 months and under 1 year, G. H. Shurman, Richland Center.....	10 00
Second best, J. E. Welch, Waukesha.....	6 00
Best sow pig over 6 months and under 1 year, J. E. Welch, Waukesha.....	10 00
Second best, E. Wait & Son, La Grange.....	6 00
Best boar pig under 6 months, J. E. Welch, Waukesha.....	10 00
Second best, E. Wait & Son, La Grange.....	6 00
Best sow pig under 6 months, E. Wait & Son, La Grange.....	10 00
Second best, B. T. Fowler, Whitewater.....	6 00
Best boar of any age, B. T. Fowler, Whitewater.....	15 00
Best sow of any age, J. E. Welch, Waukesha.....	15 00
Best 5 head of swine under 1 year old, the get of one boar, the sire to be shown with the herd and considered in making the award, E. Wait & Son, La Grange.....	20 00

CLASS 31 — *Chester White and Jersey Reds.*

Best boar 2 years old and over, J. B. Barker, Millard.....	\$15 00
Second best, H. D. Hughes, Antioch, Ill.....	10 00
Best boar 1 year and under 2, H. D. Hughes, Antioch, Ill.....	8 00
Best breeding sow 2 years and over, J. B. Barker & Son, Millard.....	10 00
Second best, J. B. Barker & Son, Millard.....	15 00
Best breeding sow with litter of sucking pigs, not less than 4, J. B. Barker & Son, Millard.....	15 00
Second best, H. D. Hughes, Antioch, Ill.....	10 00
Best boar pig over 6 mos. and under 1 year, J. B. Barker & Son, Millard.....	6 00
Best sow pig over 6 mos. and under 12 mos., H. D. Hughes, Antioch, Ill.....	10 00
Second best, C. N. Griffith, Whitewater.....	6 00
Best boar pig under 6 mos., J. B. Barker & Son, Millard.....	10 00
Second best, J. B. Barker & Son, Millard.....	6 00
Best sow pig under 6 months, J. B. Barker & Son, Millard.....	10 00
Second best, S. B. Barker & Son, Millard.....	6 00
Best boar of any age, J. B. Barker & Son, Millard.....	15 00
Best sow of any age, J. B. Barker & Son, Millard.....	15 00
Best 5 head of swine under 1 year old the get of one boar, the sire to be shown with the herd and considered in making the award, J. B. Barker & Son, Millard.....	20 00

CLASS 32 — *Berkshire and Victorias.*

Best boar 2 years old and over, J. M. Scoville, Lowville	\$15 00
Second best, J. R. Brabazon, Delavan	10 00
Best boar, 1 year and under 2, E. H. Parks, Dodge's Corners.....	12 00
Second best, J. R. Brabazon, Delavan	8 00
Best breeding sow, 2 years and over, J. R. Brabazon, Delavan.....	15 00
Second best, G. H. Shurman, Richland Center.....	10 00
Best breeding sow, 1 year and under 2, J. R. Brabazon, Delavan....	12 00
Second best, J. M. Scoville, Lowville	8 00
Best breeding sow with litter of sucking pigs, not less than 4, G. H. Shurman, Richland Center	15 00
Second best, E. H. Park, Dodge's Corners.....	10 00
Best boar over 6 mos. and under 1 year, J. R. Brabazon, Delavan ..	6 00
Best sow pig over 6 months and under 1 year, E. H. Parks, Dodge's Corners	10 00
Second best, J. R. Brabazon, Delavan.....	6 00
Best boar pig under 6 months, E. H. Parks, Dodge's Corner.....	10 00
Second best, G. H. Shurman, Richland Center.....	6 00
Best sow pig under 6 months, G. H. Shurman, Richland Center.....	10 00
Second best, E. H. Parks, Dodge's Corner.....	6 00
Best boar of any age, J. M. Scoville, Lowville.....	15 00
Best sow of any age, J. R. Brabazon, Delavan.....	15 00
Best 5 head of swine under 1 year old, the get of one boar, the sire to be shown with the herd and considered in making the award, E. H. Parks, Dodge's Corner.....	20 00

CLASS 33 — *Essex, Suffolk, Small Yorkshire and Cheshire.*

Best boar, 1 year and under 2, J. D. Cass, Beloit.....	\$9 00
Best breeding sow 2 years and over, Geo. McKerrow, Sussex.....	15 00
Second, J. D. Cass, Beloit	10 00
Best breeding sow 1 year and under 2, J. D. Cass, Beloit.....	12 00
Second best, Geo. McKerrow, Sussex.....	8 00
Best breeding sow with litter of sucking pigs, not less than 4, Geo. McKerrow, Sussex	10 00
Best boar pig over 6 months and under 1 year, D. H. Donnal, Milwaukee	10 00
Second best, John Long, Waukegan, Ill.....	6 00
Best sow pig over 6 months and under 12 months, John Long, Waukegan, Ill.....	\$10 00
Second best, D. H. Donnal, Milwaukee.....	6 00
Best boar pig under 6 months, J. D. Cass, Beloit.....	10 00
Second best, Geo. McKerrow, Sussex.....	6 00
Best sow pig under 6 months, Geo. McKerrow, Sussex.....	10 00
Second best, J. D. Cass, Beloit.....	6 00
Best boar, any age, D. H. Donnal, Milwaukee.....	15 00
Best sow, any age, Geo. McKerrow, Sussex.....	15 00
Best 5 head of swine under 1 year old, the get of one boar, the sire to be shown with the herd and considered in making the award, J. D. Cass, Beloit	20 00

DEPARTMENT E — POULTRY.

CLASS 34 — *Asiatics*.

Best pair Light Brahma fowls, E. G. Roberts, Ft. Atkinson	\$3 50
Second best, Albert Humphrey, Omro	2 50
Best pair Light Brahma chicks, Albert Humphrey, Omro	3 00
Second best, J. D. Cass, Beloit	2 00
Best pair Dark Brahma fowls, E. G. Roberts, Ft. Atkinson	3 50
Second best, Albert Humphrey, Omro	3 50
Best pair Dark Brahma chicks, Albert Humphrey, Omro	3 00
Second best, E. G. Roberts, Ft. Atkinson	2 00
Best pair Buff Cochins fowls, Albert Humphrey, Omro	3 50
Second best, Albert Humphrey, Omro	2 50
Best pair Buff Cochins chicks, J. R. Brabazon, Delavan	3 00
Second best, Albert Humphrey, Omro	2 00
Best pair Partridge Cochins fowls, Albert Humphrey, Omro	3 50
Second best, Geo. Harding, Waukesha	2 50
Best pair Partridge Cochins chicks, Geo. Harding, Waukesha	3 00
Second best, Albert Humphrey, Omro	2 00
Best pair White Cochins fowls, Albert Humphrey, Omro	3 50
Second best, J. R. Brabazon, Delavan	2 50
Best pair of White Cochins chicks, J. R. Brabazon, Delavan	3 00
Second best, Albert Humphrey, Omro	2 00
Best pair Black Cochins fowls, J. R. Brabazon, Delavan	3 50
Second best, E. G. Roberts, Ft. Atkinson	2 50
Best pair Black Cochins chicks, E. G. Roberts, Ft. Atkinson	3 00
Second best, J. R. Brabazon, Delavan	2 00
Best pair Am. Dominique fowls, J. R. Brabazon, Delavan	3 50
Second best, J. R. Brabazon, Delavan	2 50
Best pair Am. Dominique clucks, E. G. Roberts, Ft. Atkinson	3 00
Second best, J. R. Brabazon, Delavan	2 00
Best pair Plymouth Rock fowls, E. G. Roberts, Ft. Atkinson	3 50
Second best, Geo. Harding, Waukesha	2 50
Best pair Plymouth Rock chicks, E. G. Roberts, Ft. Atkinson	3 00
Second best, Samuel A. Jones, Hustisford	2 00
Best pair Langshan fowls, Deerfield & Warner, Whitewater	3 50
Second best, E. G. Roberts, Ft. Atkinson	2 50
Best pair Langshan chicks, Deerfield & Warner, Whitewater	3 00
Second best, E. G. Roberts, Ft. Atkinson	2 00
Best pair Black Spanish (white face) fowls, J. R. Brabazon, Delavan	3 50
Second best, Samuel A. Jones, Hustisford	2 50
Best pair White Leghorn chicks, Samuel A. Jones, Hustisford	3 00
Second best, E. G. Roberts, Ft. Atkinson	2 00
Best pair Brown Leghorn fowls, Samuel A. Jones, Hustisford	3 50
Second best, E. G. Roberts, Ft. Atkinson	2 50
Best pair Brown Leghorn chicks, Deerfield & Warner, Whitewater	3 00
Second best, Geo. Harding, Waukesha	2 00
Best pair Black Hamburg fowls, E. G. Roberts, Fort Atkinson	3 50
Best pair Black Hamburg chicks, E. G. Roberts, Fort Atkinson	3 00
Best pair Silver Spangled Hamburg fowls, Deerfield & Warner, Whitewater	3 50
Second best, Wm. Mansfield, Johnson's Creek	2 50
Best pair Silver Spangled Hamburg chicks, Mrs. A. W. Lehman, Neoha	3 00
Second best, Deerfield & Warner, Whitewater	2 00
Best pair Silver Spangled or Penciled Hamburg fowls, J. R. Brabazon, Delavan	3 50
Second best, Deerfield & Warner, Whitewater	2 50

Best pair Silver Spangled or Penciled Hamburg chicks, J. R. Brabazon, Delavan.....	\$3 00
Best pair Golden Spangled or Penciled Hamburg chicks, J. R. Brabazon, Delavan.....	3 00
Second best, J. R. Brabazon, Delavan.....	2 00
Best pair Golden Spangled Hamburg fowls, E. G. Roberts, Fort Atkinson.....	3 50
Best pair Houdan fowls, E. G. Roberts, Ft. Atkinson.....	3 50
Second best, J. R. Brabazon, Delavan.....	2 50
Best pair Houdan chicks, Deerfield & Warner, Whitewater.....	3 00
Second best, E. G. Roberts, Ft. Atkinson.....	2 00
Best pair Black Polish (White Cres) fowls, E. G. Roberts, Ft. Atkinson.....	3 50
Second best, Deerfield & Warner, Whitewater.....	2 50
Best pair Black Polish chicks, Deerfield & Warner, Whitewater.....	3 00
Second best, E. G. Roberts, Ft. Atkinson.....	2 00
Best pair White Polish fowls, Deerfield & Warner, Whitewater.....	3 50
Second best, Deerfield & Warner, Whitewater.....	2 50
Best pair White Polish chicks, Deerfield & Warner, Whitewater.....	3 00
Second best, J. R. Brabazon, Delavan.....	2 00
Best pair Silver Polish fowls, Deerfield & Warner, Whitewater.....	3 50
Best pair Silver Polish chicks, Deerfield & Warner, Whitewater.....	3 00
Second best, J. R. Brabazon, Delavan.....	2 00
Best pair Golden Polish fowls, J. R. Brabazon, Delavan.....	3 50
Best pair Golden Seabright fowls, J. R. Brabazon, Delavan.....	3 50
Best pair Golden Seabright chicks, E. G. Roberts, Ft. Atkinson.....	3 00
Best pair Japanese fowls, Chas. Fiebantz Milwaukee.....	2 50
Best pair any other variety fowls, Deerfield & Warner, Whitewater.....	3 50
Second best, J. R. Brabazon, Delavan.....	2 50
Best pair any other variety chicks E. G. Roberts, Ft. Atkinson.....	3 00
Best pair Brown Red fowls, E. G. Roberts, Ft. Atkinson.....	3 50
Best pair black breasted red game fowls, J. R. Brabazon, Delavan..	3 50
Best pair black breasted red Game chicks, J. R. Brabazon, Delavan.	2 00
Best pair bronze turkey fowls, Mrs. A. W. Lehman, Neosha.....	3 50
Second best, J. D. Cass, Beloit.....	2 50
Best pair bronze turkey chicks, Mrs. A. W. Lehman, Neosha.....	3 00
Second best, J. R. Brabazon, Delavan.....	2 00
Best pair common turkey fowls, J. D. Cass, Beloit.....	3 00
Second best, J. R. Brabazon, Delavan.....	2 00
Best pair common turkey chicks, J. D. Cass, Beloit.....	2 50
Second best, Deerfield & Warner, Whitewater.....	2 00
Best pair Rocky Mountain or White Holland turkey fowls, Sam'l A. Jones, Hustisford.....	3 50
Second best, Deerfield & Warner, Whitewater.....	2 50
Best pair Rocky Mountain or White Holland turkey chicks, Deerfield & Warner, Whitewater.....	3 00
Second best, Samuel A. Jones, Hustisford.....	2 00
Best pair wild turkey fowls, Deerfield & Warner, Whitewater.....	2 50
Best pair wild turkey chicks, Deerfield & Warner, Whitewater.....	2 00
Best pair Toulouse geese, Deerfield & Warner, Whitewater.....	3 00
Second best, J. R. Brabazon, Delavan.....	2 00
Best pair Pekin ducks, Deerfield & Warner Whitewater.....	3 00
Second best, Samuel A. Jones, Hustisford.....	2 00
Best pair Embden geese, J. R. Brabazon, Delavan.....	2 00
Best pair white China geese, J. R. Brabazon, Delavan.....	2 00
Best pair Aylesbury ducks, J. R. Brabazon, Delavan.....	2 00
Best pair Rouen ducks, Deerfield & Warner, Whitewater.....	3 00
Second best, J. R. Brabazon, Delavan.....	2 00
Best pair Muscovy ducks, J. R. Brabazon, Delavan.....	2 00
Best pair Cayuga ducks, J. R. Brabazon, Delavan.....	2 00
Best pair Guinea fowls, Deerfield & Warner, Whitewater.....	3 50
Second best, E. G. Roberts, Ft. Atkinson.....	2 50
Best pair Guinea chicks, J. D. Cass, Beloit.....	2 00

Best and greatest variety of poultry shown by one person, E. G. Roberts, Ft. Atkinson	\$3 00
Second best, Deerfield & Warner, Whitewater.....	3 00

DEPARTMENT F.— AGRICULTURE.

CLASS 35 — *Field Products.*

Best sample spring wheat (Rio Grande or China) Tea, C. E. Angell, Oshkosh	\$5 00
Second best, H. P. West, Fayetteville.....	3 00
Best sample spring wheat (Fife), C. E. Angell, Oshkosh.....	5 00
Second best, H. P. West, Fayetteville.....	3 00
Best sample Blue Stem spring wheat, H. P. West, Fayetteville.....	5 00
Second best, C. E. Angell, Oshkosh.....	3 00
Best any other spring wheat, M. F. Pease, Lowell.....	5 00
Second best, C. E. Angell, Oshkosh.....	3 00
Best white winter wheat, C. E. Angell, Oshkosh.....	5 00
Second best, C. Leonardt, Sturgeon Bay	3 00
Best red winter wheat, M. F. Pease, Lowell	5 00
Second best, Geo. McKerrow, Sussex.....	3 00
Best rye, Geo. McKerrow, Sussex	5 00
Second best, J. D. Gilbert, Wauwatosa.....	3 00
Best oats, C. E. Angell, Oshkosh.....	5 00
Second best, H. P. West, Fayetteville	3 00
Best white Schonen oats, Samuel Baird, Waukesha	5 00
Second best, C. E. Angell, Oshkosh	3 00
Best barley, Geo. McKerrow, Sussex	5 00
Second best, H. P. West, Fayetteville	3 00
Best buckwheat, H. P. West, Fayetteville.....	5 00
Second best, C. E. Angell, Oshkosh.....	3 00
Best flax seed, C. E. Angell, Oshkosh.....	5 00
Second best, Geo. McKerrow, Sussex	3 00
Best timothy seed, Samuel Baird, Waukesha.....	5 00
Second best, Lorin Finch, Janesville	3 00
Best clover seed, Samuel Baird, Waukesha.....	5 00
Second best, H. P. West, Fayetteville	3 00
Best variety red top, Chas. N. Taylor, Waukesha.....	3 00
Best Hungarian millet, C. E. Angell, Oshkosh.....	3 00
Best of any other variety, Elmer Ward, Caldwell.....	3 00
Best field peas, C. E. Angell, Oshkosh.....	5 00
Best peas of any other variety, C. E. Angell, Oshkosh.....	3 00
Second best, Elmer G. Ward, Caldwell.....	2 00
Best navy beans, C. E. Angell, Oshkosh.....	5 00
Second best, Elmer G. Ward, Caldwell.....	3 00
Best beans of any other variety, C. E. Angell, Oshkosh.....	3 00
Best dent corn, white, Henry Bowers, Milton	5 00
Second best, H. P. West, Fayetteville.....	3 00
Best dent corn, yellow, F. D. Hubbard, Caldwell.....	5 00
Second best, H. P. West, Fayetteville.....	3 00
Best flint corn, white, F. D. Hubbard, Caldwell.....	5 00
Second best, Samuel Baird, Waukesha.....	3 00
Best flint corn, yellow, Elmer G. Ward, Caldwell.....	5 00
Second best, J. L. Mahoney, Brown Deer.....	3 00
Best bushel corn in the ear, any variety, F. D. Hubbard, Caldwell.....	10 00
Second best, H. P. West, Fayetteville.....	5 00

Best bale broom corn, Amazia Sherman, Janesville.....	\$3 00
Best exhibition of field products grown in the state, including not less than twelve varieties in all, each sample to be free to compete for the foregoing individual prizes, both quality and number to be considered, and being not less in quantity than as above specified, C. E. Angell, Oshkosh.....	20 00
Second best, H. P. West, Fayetteville.....	10 00

CLASS 36 — *Garden and Vegetable Produce.*

Best Early Rose or Ohio potatoes, Henry J. Grover, Wauwatosa....	\$3 00
Second best, H. P. West, Fayetteville.....	2 00
Best Beauty of Hebron, Hugh McCafrey, Butler.....	3 00
Second best, I. B. Cross, Bay View.....	2 00
Best any other variety early potatoes, H. P. West, Fayetteville....	3 00
Second best, H. P. West, Fayetteville.....	2 00
Best Snowflake potatoes, Henry J. Grover, Wauwatosa.....	3 00
Second best, H. P. West, Fayetteville.....	2 00
Best Burbank seedling potatoes, C. Wynoble, St. Francis.....	3 00
Second best, Christ Gumber, Milwaukee.....	2 00
Best any other variety late potatoes, Hugh McCafery, Butler.....	3 00
Second best, F. D. Hubbard, Caldwell.....	2 00
Best and largest variety of potatoes, H. P. West, Fayetteville.....	5 00
Best yellow Nansmond sweet potatoes, H. P. West, Fayetteville..	3 00
Second best, C. E. Angell, Oshkosh.....	2 00
Best four quarts of Lima beans shelled, Trowbridge Bros., Milwaukee	3 00
Second best, Elmer G. Ward, Caldwell.....	2 00
Best Turnip beets, Christ Gumber, Milwaukee.....	3 00
Second best, C. Wynoble, St. Francis.....	2 00
Best mangel wurzel, Chas. Severt, Wauwatosa.....	3 00
Second best, Wm. Guenther, Oakwood.....	2 00
Best red Wether-field onions, Trowbridge Bros., Milwaukee.....	3 00
Second best, Elmer G. Ward, Caldwell.....	2 00
Best yellow Dauvers, F. D. Hubbard, Caldwell.....	3 00
Second best, Elmer G. Ward, Caldwell.....	2 00
Best white variety of onions, C. Wynoble, St. Francis.....	3 00
Second best, Elmer G. Ward, Caldwell.....	2 00
Best drumhead cabbage, Christ Gumber, Milwaukee.....	3 00
Second best, C. Wynoble, St. Francis.....	2 00
Best three cabbages of any other variety, C. Wynoble, St. Francis.	3 00
Second best, Trowbridge Bros., Milwaukee.....	2 00
Best long orange carrots, Trowbridge Bros., Milwaukee.....	3 00
Second best, Elmer G. Ward, Caldwell.....	2 00
Best horn carrots, Trowbridge Bros., Milwaukee.....	3 00
Second best, J. H. Felch, Amherst Junction.....	2 00
Best head cauliflower, C. Wynoble, St. Francis.....	2 00
Best ten head celery, Trowbridge Bros., Milwaukee.....	3 00
Second best, Mrs. E. G. Ward, Caldwell.....	2 00
Best twelve ears early sweet corn, John Easman, Madison.....	3 00
Second best, Elmer G. Ward, Caldwell.....	2 00
Best twelve ears late sweet corn, G. H. Schurman, Richland Center	3 00
Second best, C. Wynoble, St. Francis.....	2 00
Best six egg plants, Elmer G. Ward, Caldwell.....	1 00
Best six watermelons, Elmer G. Ward, Caldwell.....	2 00
Best six nutmeg melons, E. B. Thomas, Dodge's Corners.....	3 00
Second best, Trowbridge Bros., Milwaukee.....	2 00
Best parsnips, C. Wynoble, St. Francis.....	2 00
Best twelve large red peppers, Trowbridge Bros., Milwaukee.....	1 00
Best peck vegetables oysters, C. Wynoble, St. Francis.....	1 00

Best six Hubbard squashes, Trowbridge Bros, Milwaukee.....	\$3 00
Second best, E. H. Parks, Dodge's Corner.....	2 00
Largest squash of any variety, John Enjen-beck, St. Francis.....	3 00
Second best, Christ. Gumber, Milwaukee.....	2 00
Best twelve tomatoes, Elmer G. Ward, Caldwell.....	3 00
Second best, I. B. Cross, Bay View.....	2 00
Best flat turnips, Elmer G. Ward, Caldwell.....	3 00
Second best, Christ. Gumber, Milwaukee.....	2 00
Best rutabagas, Elmer G. Ward, Caldwell.....	2 00
Best exhibition by non-professionals including not less than five specimens of vegetables, nor less than twelve varieties in all, both quality and number of varieties to be considered, Elmer G. Ward, Caldwell.....	3 00

CLASS 37 — *Products of the flouring mill, dairy and apiary.*

Best barrel winter wheat flour, M. F. Pease, Lowell.....	\$5 00
Best barrel spring wheat flour, M. F. Pease, Lowell.....	5 00
For best roll print or package not less than twenty pounds dairy butter, F. C. Curtiss, Rock & Ran.....	20 00
Second best, Elvin Atkin, Waukesha.....	10 00
Best sample twelve pounds or more of comb honey in most marketable shape, Chas. H. Green, Waukesha.....	3 00
Second best, Geo. Acker, Butler.....	2 00
Best sample extracted honey five pounds or more in most marketable shape, Isaac Gale & Son, Waukesha.....	3 00
Second best, Chas. H. Green, Waukesha.....	2 00
Best bee hive for comb honey, Chas. H. Green, Waukesha.....	2 00
Best bee hive for extracted honey, Chas. H. Green, Waukesha.....	2 00
Best honey extractor, Chas. H. Green, Waukesha.....	1 00
Best colony Italian bees in observatory hive, Chas. H. Green, Waukesha.....	3 00
Best wax extractor, Chas. H. Green, Waukesha.....	2 00
Best display of apiarian tools and fixtures, Chas. H. Green, Waukesha.....	2 00
Best samples of comb foundation, Chas. H. Green, Waukesha.....	2 00
Second best, Chas. Voland, Kiel.....	1 00
Best samples beeswax, five pounds or more, A. J. Hay, Yorkville..	2 00
Second best, Geo. Acker, Butler.....	1 00

CLASS 38 — *Household Products.*

Best loaf graham bread, Mrs. E. G. Ward, Caldwell.....	\$5 00
Second best, Mrs. A. C. Bates, Janesville.....	3 00
Best loaf white bread hop yeast, A. J. Atwood, Milwaukee.....	5 00
Second best, E. H. Park, Dodge's Corner.....	3 00
Best loaf Indian bread, Mrs. Steve Raleigh, Burlington.....	5 00
Second best, Hattie Foote, Spring Prairie.....	3 00
Best sponge cake, Mrs. O. J. Swan, Wauwatosa.....	4 00
Second best, Mrs. M. L. Bracken, Beaver Dam.....	2 00
Best pound cake, Mrs. M. V. Sheldon, Racine.....	4 00
Second best, Mrs. M. L. Bracken, Beaver Dam.....	2 00
Best jelly cake, Mrs. Steve. Raleigh, Burlington.....	4 00
Second best, Mrs. M. V. Sheldon, Racine.....	2 00

Best chocolate cake, Mrs. M. V. Sheldon, Racine.....	\$1 00
Second best, Mrs. M. L. Bracken, Beaver Dam.....	2 00
Best cocoanut cake, Mrs. O. J. Swan, Wauwatosa.....	4 00
Second best, Mrs. M. V. Sheldon, Racine.....	2 00
Best fruit cake, Mrs. S. W. Raleigh, Burlington.....	4 00
Second best, Mrs. J. Hannam, Trempealeau.....	2 00
Best doughnuts, H. P. West, Fayetteville.....	4 00
Second best, A. J. Atwood, Milwaukee.....	2 00
Best and largest exhibition of articles of above sort, Mrs. M. V. Sheldon, Racine.....	5 00
Second best, Mrs. O. J. Swan, Wauwatosa.....	3 00

Sealed and preserved fruits and pickles.

Best canned peaches, Mrs. G. P. Peffer, Pewaukee.....	\$3 00
Best canned plums, Mrs. C. F. Fisher, Wauwatosa.....	2 00
Best canned currants, Mrs. Dr. Fisk, Wauwatosa.....	2 00
Best canned tomatoes, Mrs. Dr. Fisk, Wauwatosa.....	2 00
Best canned gooseberries, John Day, Greenville.....	2 00
Best canned raspberries, Mrs. Dr. Fisk, Wauwatosa.....	2 00
Best canned strawberries, Mrs. C. H. Root, Ripon Wis.....	2 00
Best canned grapes, Mrs. C. T. Fisher, Wauwatosa.....	2 00
Best canned blackberries, Mrs. G. P. Peffer, Pewaukee.....	2 00
Best canned cherries, Mrs. J. Hannam, Trempealeau.....	2 00
Best canned pears, Mrs. C. T. Fisher, Wauwatosa.....	2 00
Best canned hyslop or Transcendent crabs, Mrs. C. T. Fisher, Wauwatosa.....	2 00
Best plum jelly, Mrs. C. H. Root, Ripon, Wis.....	2 00
Best currant jelly, Mrs. C. T. Fisher, Wauwatosa.....	2 00
Best red raspberry jelly, Mrs. C. T. Fisher, Wauwatosa.....	2 00
Best crab apple jelly, Mrs. C. T. Fisher, Wauwatosa.....	2 00
Best marmalade, Mrs. J. Hannam, Trempealeau.....	2 00
Best raspberry jam, Mrs. A. J. Fidler, Racine.....	2 00
Best blackberry jam, Mrs. Creighton, Milwaukee.....	2 00
Best sweet pickled peaches, Mrs. G. P. Peffer, Pewaukee.....	2 00
Best sweet pickled apples, Mrs. C. T. Fisher, Wauwatosa.....	2 00
Best apple butter, Mrs. J. Hannam, Trempealeau.....	2 00
Best tomato catsup, Mrs. Dr. Fisk, Wauwatosa.....	2 00
Best cucumber pickles, Mrs. C. T. Fisher, Wauwatosa.....	2 00
Best mangoes, Mrs. C. H. Root, Ripon.....	2 00
Best red cabbage, Mrs. C. T. Fisher, Wauwatosa.....	2 00
Best cauliflower, Mrs. C. H. Root, Ripon.....	2 00
Best onions, Mrs. C. H. Root, Ripon.....	2 00
Best mixed pickles, Mrs. J. Hannam, Trempealeau.....	2 00
Best and largest exhibition, fruits, jellies, jams and pickles in glass jars, Mrs. C. H. Root, Ripon.....	5 00

DEPARTMENT G — FRUITS AND FLOWERS.

CLASS 39 — *Fruit by Professional Cultivators.*

APPLES.

Best display of varieties not to exceed 20, 3 or more specimens each, A. G. Tuttle, Baraboo.....	\$10 00
Second best, F. N. Benham, Olivet, Mich.....	7 00
Third best, C. Hirschinger, Baraboo.....	3 00
Best display of ten varieties, Geo. Kellogg, Janesville.....	6 00
Second best, Wm. Reid, North Prairie.....	4 00
Third best, Geo. Acker, Butler.....	2 00
Best 5 varieties adapted to northwest, 3 specimens each, Geo. Acker, Butler.....	7 00
Second best, A. G. Tuttle, Baraboo.....	5 00
Third best, Geo. Kellogg, Janesville.....	2 00
Best 5 varieties, winter, 3 specimens each, A. G. Tuttle, Baraboo..	3 00
Second best, C. Hirschinger, Baraboo.....	2 00
Third best, Geo. Acker, Butler.....	1 00
Best show 10 varieties 1 qt. and show apples, 3 or more specimens, C. Hirschinger, Baraboo.....	5 00
Second best, Geo. Acker, Butler.....	3 00
Third best, F. N. Benham, Olivet, Mich.....	1 00
Best seedling apple, Wm. Reid, North Prairie.....	4 00
Best show 10 varieties Russian apple, 4 specimens each, A. G. Tuttle, Baraboo.....	10 00
Best plate of Duchess of Oldenburg, A. G. Tuttle, Baraboo.....	1 00
Best plate of Fameuse, F. N. Benham, Olivet, Mich.....	1 00
Best plate of Golden Russet, Geo. Acker, Butler.....	1 00
Best plate of Pewaukee, Geo. Acker, Butler.....	1 00
Best plate of St. Lawrence, Geo. Acker, Butler.....	1 00
Best plate of Tallman Sweet, F. N. Benham, Olivet, Mich.....	1 00
Best plate of Utter, A. G. Tuttle, Baraboo.....	1 00
Best plate of Alexander, A. G. Tuttle, Baraboo.....	1 00
Best plate of Plumb Cider, Wm. Reid, North Prairie.....	1 00
Best plate of Wealthy, Geo. Acker, Butler.....	1 00
Best plate of McMahon's White, C. Hirschinger, Baraboo.....	1 00
Best plate of Orange Winter, A. G. Tuttle, Baraboo.....	1 00
Best plate of Wolf River, E. W. Daniels, Auroraville.....	1 00
Best plate of N. W. Greening, E. W. Daniels, Auroraville.....	1 00
Best plate of Haas, Geo. Acker, Butler.....	1 00
Best plate of Fall Orange, Geo. Acker, Butler.....	1 00
Largest apples, C. Hirschinger, Baraboo.....	1 00
Handsomest apple, A. G. Tuttle, Baraboo.....	1 00

PEARS.

Best and greatest display of varieties, F. N. Benham, Olivet, Mich. \$3 00	
Second best, Wm. Reid, North Prairie.....	1 00
Best three varieties, F. N. Benham, Olivet, Mich.....	2 00
Best Flemish Beauty, F. N. Benham, Olivet, Mich.....	2 00
Second best, Wm. Reid, North Prairie.....	1 00

PLUMS.

Best and greatest variety, F. N. Benham, Olivet, Mich.....	\$3 00
Best three varieties, F. N. Benham, Olivet, Mich.....	2 00
Second best, Geo. Kellogg, Janesville.....	1 00
Best collection of native, A. G. Tuttle, Baraboo.....	2 00
Best plate of native, A. G. Tuttle, Baraboo.....	1 00

CLASS 40 — *Grapes.*

Best and greatest display of varieties, 5 specimens each, Wm. Reid, North Prairie.....	\$7 00
Second best, A. G. Tuttle, Baraboo.....	5 00
Third best, Geo. Kellogg, Janesville.....	2 00
Best ten varieties, Wm. Reid, North Prairie.....	5 00
Second best, Coe Converse & Co., Ft. Atkinson.....	3 00
Best 5 varieties, 3 specimens, Wm. Reid, North Prairie.....	3 00
Second best, A. G. Tuttle, Baraboo.....	2 00
Third best, Geo. Kellogg, Janesville.....	1 00
Best three bunches Concord on one cane, Wm. Reid, North Prairie.....	2 00
Second best, A. G. Tuttle, Baraboo.....	1 00
Best three bunch Delaware on one cane, Geo. Kellogg, Janesville.....	2 00
Second best, Wm. Reid, North Prairie.....	1 00
Best three bunch Worden on one cane, Wm. Reid, North Prairie.....	2 00
Second best, A. G. Tuttle, Baraboo.....	1 00
Best three bunch Moore's Early on one cane, A. G. Tuttle, Baraboo.....	2 00
Best three bunch Brighton on one cane, Wm. Reid, North Prairie.....	2 00
Best three bunch Duchess on one cane, Coe, Converse & Co., Ft. Atkinson.....	2 00
Best three bunch Wilder on one cane, Wm. Reid, North Prairie.....	2 00
Second best, A. G. Tuttle, Baraboo.....	1 00
Best three bunch Lindley on one cane, Wm. Reid, North Prairie.....	2 00
Second best, A. G. Tuttle, Baraboo.....	1 00
Best single variety, quality to rule, Geo. Kellogg, Janesville.....	3 00
Second best, C. H. Greenman, Chatfield, Minn.....	2 00

CRABS.

Best and greatest variety named, C. Hirschinger, Baraboo.....	\$3 00
Second best, A. G. Tuttle, Baraboo.....	2 00
Third best, Geo. Kellogg, Janesville.....	1 00
Best plate Hyslop, A. G. Tuttle, Baraboo.....	1 00
Best plate of Transcendant, C. Hirschinger, Baraboo.....	1 00
Best plate of Whitney No 20, A. G. Tuttle, Baraboo.....	1 00
Best Seedling Crab, Wm. Ried, North Prairie.....	2 00
Best collection fruit of all kinds, A. G. Tuttle, Baraboo.....	12 00
Second best, Wm. Ried, North Prairie.....	9 00
Third best Geo. Kellogg, Janesville.....	6 00
Fourth best, C. Hirschinger, Baraboo.....	4 00

CLASS 41 — *Fruit by Non Professional Cultivators.*

APPLES.

Best display of varieties not to exceed 20, three or more specimens each, Geo. H. Haines, Baraboo.....	\$10 00
Second best, D. E. Wright, Traverse City, Mich.....	7 00
Third best, Isaac Gale & Son, Waukesha.....	3 00
Best display of 10 varieties, E. A. Swan, Wauwatosa.....	6 00
Second best, Geo. H. Haines, Baraboo.....	4 00
Third best, Geo. J. Jeffery, Milwaukee.....	2 00
Best 5 varieties adapted to northwest, 3 specimens each, Geo. Jeffery, Milwaukee.....	7 00
Second best, John Dey, Greenfield.....	5 00
Third best, Geo. H. Haines, Baraboo.....	2 00
Best 5 varieties winter, 3 specimens each, Geo. H. Haines, Baraboo.....	3 00
Second best, A. J. Hay, Yorkville.....	2 00
Third best, Geo. Jeffrey, Milwaukee.....	1 00
Best show 10 varieties large showy apples, 3 or more specimens each, D. E. Wright, Traverse City, Mich.....	5 00
Second best, Geo. Jeffrey, Milwaukee.....	3 00
Third best, Geo. H. Haines, Baraboo.....	1 00
Best seedling apple, Geo. Jeffrey, Milwaukee.....	4 00
Second best, Mrs. Edwin Nye, Appleton.....	2 00
Best show of 10 varieties of Russian apples, 4 specimens each, Geo. H. Haines, Baraboo.....	10 00
Second best, Geo. Jeffrey, Milwaukee.....	7 00
Best plate Duchess of Oldenberg, E. A. Swan, Wauwatosa.....	1 00
Best plate of Fameuse, Geo. Jeffrey, Milwaukee.....	1 00
Best plate Golden Russet, M. A. Holt, Madison.....	1 00
Best plate Pewaukee, E. A. Swan, Wauwatosa.....	1 00
Best plate of St. Lawrence, E. A. Swan, Wauwatosa.....	1 00
Best plate Tallman Sweet, E. A. Swan, Wauwatosa.....	1 00
Best plate Utter, E. A. Swan, Wauwatosa.....	1 00
Best plate of Alexander, E. A. Swan, Wauwatosa.....	1 00
Best plate of Plumb Cider, Geo. Jeffrey, Milwaukee.....	1 00
Best plate of Wealthy, Geo. Jeffrey, Milwaukee.....	1 00
Best plate of Orange Winter, Geo. H. Haines, Baraboo.....	1 00
Best plate Haas, E. A. Swan, Wauwatosa.....	1 00
Best plate Fall Orange, Geo. Jeffrey, Milwaukee.....	1 00
Largest apple, E. A. Swan, Wauwatosa.....	1 00
Handsome apple, D. E. Wright, Traverse City, Mich.....	1 00

PEARS.

Best and greatest display of varieties, Geo. Jeffrey, Milwaukee.....	\$3 00
Second best D. E. Wright, Traverse City, Mich.....	1 00
Best three varieties, D. E. Wright, Traverse City, Mich.....	2 00
Second best, Geo. Jeffrey, Milwaukee.....	1 00
Best Flemish Beauty, D. E. Wright, Traverse City, Mich.....	2 00
Second best, Geo. Jeffrey, Milwaukee.....	1 00

PLUMS.

Best and greatest variety, Geo. Jeffrey, Milwaukee.....	\$3 00
Second best, D. E. Wright, Traverse City, Mich.....	2 00
Best three varieties, D. E. Wright, Traverse City, Mich.....	2 00
Second best, Geo. Jeffrey, Milwaukee.....	1 00

CLASS 42 — *Grapes.*

Best and greatest display of varieties, 5 specimens, Wm. Fox, Baraboo	\$10 00
Second best, Geo. Jeffrey, Milwaukee	7 00
Third best D. E. Wright, Traverse City, Mich.	3 00
Best 10 varieties, Wm. Fox, Baraboo	5 00
Second best, J. S. McGowan, Janesville	3 00
Best 5 varieties 3 specimens, Wm. Fox, Baraboo	3 00
Second best, Geo. H. Haines, Baraboo	2 00
Best 3 bunches Concord on one cane, Geo. Jeffrey, Milwaukee	2 00
Second best, J. S. McGowan, Janesville	1 00
Best 3 bunches of Delaware on one cane, Geo. Jeffrey, Milwaukee ..	2 00
Second best, Wm. Fox, Baraboo	1 00
Best three bunches Worden on one cane, Wm. Fox, Baraboo	2 00
Second best, Geo. Jeffrey, Milwaukee	1 00
Best 3 bunches Moore's Early on one cane Wm. Fox, Baraboo	2 00
Second best, Geo. H. Haines, Baraboo	1 00
Best 3 bunch Brighton on one cane, Wm. Fox, Baraboo	2 00
Best 3 bunch Early Victor on one cane, Wm. Fox, Baraboo	2 00
Best 3 bunch Duchess on one cane, Wm. Fox, Baraboo	2 00
Best 3 bunches Wilder on one cane, Wm. Fox, Baraboo	2 00
Best 3 bunches Lindley on one cane, Geo. Jeffrey, Milwaukee	2 00
Best single variety, quality to rule, Wm. Fox, Baraboo	3 00
Second best, E. B. Thomas, Dodge's Corners	2 00

CRABS.

Best and greatest variety named, Geo. Jeffrey, Milwaukee	\$3 00
Second best, John Dey, Greenfield	2 00
Third best, J. H. Felch, Amherst Junction	1 00
Best plate Hyslop, Geo. H. Haines Baraboo	1 00
Best plate, Transcendant, John Dey, Greenfield	1 00
Best plate Whitney No. 20, Geo. Jeffrey, Milwaukee	1 00
Best collection fruits of all kinds, Geo. Jeffrey, Milwaukee	12 00
Second best, Wm. Fox, Baraboo	9 00
Third best, Geo. H. Haines, Baraboo	6 00
Fourth best, D. E. Wright, Traverse City, Michigan	4 00

CLASS 45 — *Flowers by Professional Cultivators.*

Best and most artistically arranged [floral design, Whitnell & Co., Milwaukee	\$6 00
Second best, Geo. W. Ringrose, Wauwatosa	4 00
Third best, J. T. Bartlett, Oconomowoc	2 00
Best and most artistically arranged basket of flowers, Whitnell & Co., Milwaukee	3 00
Second best, Geo. W. Ringrose, Wauwatosa	2 00
Best collection of cut flowers, Geo. W. Ringrose, Wauwatosa	4 00
Second best, J. T. Bartlett, Oconomowoc	3 00
Best pyramidal bouquet, Geo. W. Ringrose, Wauwatosa	3 00
Second best, J. T. Bartlett, Oconomowoc	2 00
Best pair flat table bouquets, Geo. W. Ringrose, Wauwatosa	2 00
Best bouquet everlasting flowers, Libbie Russell, Grand Haven, Mich.	1 00
Best 5 named varieties of roses, Geo. W. Ringrose, Wauwatosa	3 00

Best display of verbenas, Geo. W. Ringrose, Wauwatosa.....	\$2 00
Best show of pansies, Wm. Toole, North Freedom.....	3 00
Best show double petunias, Wm. Toole, North Freedom.....	1 00
Best show of gladiolus, Whitnell & Co., Milwaukee.....	2 00
Best show lilies, C. Hirschinger, Faraboo.....	1 00
Best show of Tube roses, A. Vesper, Rolling Prairie.....	1 00
Best show of green house plants not less than 50 nor more 100 varieties, Geo. W. Ringrose, Wauwatosa.....	10 00
Second best, J. T. Bartlett, Oconomowoc.....	6 00
Best 20 varieties green house plant in bloom, Geo. W. Ringrose, Wauwatosa.....	5 00
Best 10 geraniums, Geo. W. Ringrose, Wauwatosa.....	3 00
Best 6 fuchsias, Geo. W. Ringrose, Wauwatosa.....	2 00
Best display of flowers of all kinds grown by exhibitor, Geo. W. Ringrose, Wauwatosa.....	3 00
Best display of ornamental foliage plants, not more than 15 varieties, Isaac H. Jones, Milwaukee.....	5 00
Second best, Geo. W. Ringrose, Wauwatosa.....	3 00

CLASS 46—*Flowers by Non-Professional Cultivators.*

Best and most artistically arranged floral design, Mrs. C. H. Root, Ripon.....	\$5 00
Second best, Mrs. M. V. Sheldon, Racine.....	3 00
Best collection cut flowers, Mrs. C. H. Root, Ripon.....	4 00
Second best, Mrs. M. V. Sheldon, Racine.....	3 00
Best and most artistically arranged basket of flowers, Mrs. C. E. Root, Ripon.....	3 00
Second best, Mrs. M. V. Sheldon, Racine.....	2 00
Best pyramidal bouquet, Mrs. C. H. Root, Ripon.....	3 00
Second best, Mrs. M. V. Sheldon, Racine.....	2 00
Best pair flat table bouquets, Mrs. C. H. Root, Ripon Wis.....	2 00
Best display of dahlias, not more than 20 varieties, Mrs. G. P. Pfeffer, Pewaukee.....	2 00
Best 10 named dahlias, Mrs. G. P. Pfeffer, Pewaukee.....	2 00
Best display of roses, Mrs. C. C. Kingsley, Milwaukee.....	3 00
Best display of verbenas, Mrs. M. V. Sheldon, Racine.....	2 00
Best show of asters in quality and variety, Mrs. C. H. Root, Ripon..	2 00
Best show perennial phlox, Mrs. M. V. Sheldon, Racine.....	1 00
Best show of pansies, Mrs. C. H. Root, Ripon.....	2 00
Best show of double petunias, Mrs. M. V. Sheldon, Racine.....	1 00
Best show of dianthus, (pink) Mrs. C. H. Root, Ripon.....	1 00
Best show of gladiolus, Mrs. M. V. Sheldon, Racine.....	2 00
Best show of phlox drummond, Mrs. M. V. Sheldon, Racine.....	1 00
Best show of lilies, Mrs. M. V. Sheldon, Racine.....	1 50
Best show stocks, Mrs. C. H. Root, Ripon.....	1 00
Best show of balsam, Mrs. M. V. Sheldon, Racine.....	1 00
Best show of green house plants, not less than 25 nor more than 50 varieties, Mrs. C. C. Kingsley, Milwaukee.....	5 00
Best 10 varieties of green house plants in bloom, Mrs. C. C. Kingsley, Milwaukee.....	3 00
Best 6 fuchsias, Mrs. C. C. Kingsley, Milwaukee.....	2 00
Best display of ornamental grasses, Mrs. M. V. Sheldon, Racine.....	2 00
Best display of flowers raised by exhibitor, Mrs. C. C. Kingsley, Milwaukee.....	6 00
Best show of ornamental foliage plants, not more than 10 varieties, Mrs. C. C. Kingsley, Milwaukee.....	3 00
Display of flowers and vegetable seeds, J. T. Bartlett, Oconomowoc.....	Diploma.

DEPARTMENT I — MANUFACTURES.

CLASS 48 — *Stone Cutters' Work and Building Material.*

Best roofing material other than shingle, F. E. Hoyt, Rochester... \$5 00

CLASS 49 — *Metallurgic Products.*

Best bar steel, Wm. Frankfurth & Co., MilwaukeeDiploma.

CLASS 50 — *Stoves, Furnaces, Hollow Ware and Articles of Hardware.*

Best cooking stove for coal, W. H. Munn, Milwaukee..... \$5 00
 Best cooking stove for wood, W. H. Munn, Milwaukee..... 5 00
 Best cooking range for families, Wm. Frankfurth & Co., Milwaukee..... 5 00
 Best ornamental parlor stove, W. H. Munn, Milwaukee..... 5 00
 Best display of stoves, Wm. Frankfurth & Co., Milwaukee..Gr. Sil. Med.
 Best exhibition of brass and copper ware, Wm. Frankfurth & Co., Milwaukee.....Diploma
 Best horse shoes in variety, Henry Wood, Rochester..... \$2 00

CLASS 54 — *Carriages, Wagon Work, etc.*

Best double top carriage, Geo. C. Cribb, Milwaukee..... \$10 00
 Best single top buggy, T. G. Mandt Manufacturing Co., Stoughton.. 5 00
 Second, Steelz & Walker, Goshen, Ind..... 3 00
 Best trotting road wagon, Steelz & Walker, Goshen, Ind..... 5 00
 Best phaeton, Abbott Buggy Co., Chicago..... 5 00
 Best double light sleigh, Milwaukee Buggy Co..... 5 00
 Second, B. F. & H. L. Sweet, Fond du Lac..... 3 00
 Best double farm sleigh, T. G. Mandt Mfg Co., Stoughton..... 5 00
 Second best, B. F. & H. L. Sweet, Fond du Lac..... 3 00
 Best single sleigh, S. L. Allen & Co., Philadelphia..... 5 00
 Second best, Milwaukee Buggy Co..... 3 00
 Best common farm wagon, T. G. Mandt Mfg Co., Stoughton 5 00
 Second best, Studebecker Bros. Mfg Co., South Bend..... 3 00
 Best fancy lumber wagon, Studebecker Bros. Mfg. Co., South Bend. 5 00
 Second best, T. G. Mandt Mfg Co., Stoughton 3 00
 Best spring three-seated wagon, T. G. Mandt Mfg Co., Stoughton.. 3 00
 Best two-seated Surry Wagon, Abbot Buggy Co., Chicago..... 3 00
 Best platform spring wagon, T. G. Mandt Mfg Co., Stoughton..... 3 00

CLASS 55 — *Cabinet Ware, etc.*

Best parlor set, Matthews Bros., Milwaukee.....	\$5 00
Best chamber set, Matthews Bros., Milwaukee	5 00
Best extension table, Matthews Bros., Milwaukee	2 00
Best center table, Wm. Groeschel, Filmore.....	3 00
Second best, Matthews Bros., Milwaukee.....	2 00
Best book case, Matthews Bros., Milwaukee.....	2 00
Best lady's work stand, W. H. Hetzel	2 00
Best writing table or desk, Matthews Bros., Milwaukee.....	2 00
Best spring bed bottom, W. H. Hetzel, Milwaukee.....	3 00
Second best, Matthews Bros., Milwaukee.....	2 00
Best six dining chairs, Matthews Bros., Milwaukee	2 00
Best reclining chair, W. H. Hetzel, Milwaukee.....	5 00
Second best, Matthews Bros., Milwaukee.....	3 00

CLASS 56 — *Leather and Leather Manufacture.*

Best display carriage mats, Thos. C. Smith & Co., Milwaukee	2 00
Best carriage harness, double, Thos. C. Smith & Co., Milwaukee....	5 00
Best single harness, Thos. C. Smith & Co., Milwaukee	3 00
Best gent's saddle, Thos. C. Smith & Co., Milwaukee.....	3 00
Best lady's saddle, Thos. C. Smith & Co., Milwaukee	3 00
Best four horse collars, Thos C Smith & Co., Milwaukee.....	2 00
Best exhibition of shoes, one pair each, John Beck, Racine,	Grand Silver Medal.
Best exhibition of shoes manufactured in the state, one pair each,	
John Beck, Racine.....	5 00

CLASS 58 — *Textile Fabric Clothing.*

Best exhibition of carpets and rugs, Thomson Kohler, Milwaukee.....	\$10 00
Best fleece wool, American Merino, J. N. Crawford, Mukwanago,	\$2 00 and dip.
Best suit of men's clothing, Browning, King & Co., Milwaukee....	3 00
Best suit boy's clothing, Browning, King & Co., Milwaukee	3 00
Best exhibition of gent's hats and caps, Hansen's Fur Factory, Milwaukee	2 00
Best exhibition of furs and fur goods, Hansen's Fur Factory, Milwaukee	5 00
Best 6 buckskin gloves, Hansen's Fur Factory, Milwaukee.....	3 00
Best 6 buckskin mittens, Hansen's Fur Factory, Milwaukee.	3 00

MISCELLANEOUS ARTICLES.

Patent coping, valley and hip, F. E. Hoyt, Rochester.....	Diploma.
Fuel cartridges, Wisconsin Fuel Co., Milwaukee	Diploma.
Double water board wringer, W. H. Hetzel, Milwaukee.....	Diploma.
Exhibition of manufactured shirts, O. R. Rice & Co., Milwaukee	Diploma.
Folding bed sofa, G. W. Dewey, Milwaukee.....	Diploma.
Speeding carts, A. P. Ferguson, Ann Arbor, Michigan	Diploma.

Coffee roaster, J. & P. Just, Sauk City.....	Diploma.
Mandt's delivery wagon, T. O. Mandt Manufacturing Co., Stoughton	Diploma.
Optical goods, Julius Lando, Milwaukee.....	Diploma.
Logging sleigh, B. F. & H. L. Sweet, Fond du Lac.....	Diploma.
Curled hair, curled mattresses, Russian sleigh plumes and hair tassels and plumes, A. L. Schmidt, Milwaukee.....	Diploma.
Blinds, Climax Blind Co., Milwaukee	Diploma.
Mocasin shoes, A. W. Rich & Co., Milwaukee	Diploma.
Quick cooker, Wisconsin Fuel Co., Milwaukee.....	Diploma.
Clothes washer, Chas. A. Saxton, Milwaukee	Diploma.

DEPARTMENT K—FINE ARTS.

CLASS 60—*Sewing Machines.*

Best display of sewing machine work, Domestic Sewing Machine Co., Milwaukee.....	\$5 00
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CLASS 61—*Works of Art.*

Best portrait in oil, not heretofore exhibited, Frank Enders, Milwaukee	\$12 00
Second best, W. A. Dartt, Milwaukee.....	8 00
Best original landscape in oil work of exhibitor, not heretofore exhibited, Frank Enders, Milwaukee.....	12 00
Second best, Miss Floy Miner, Janesville.....	8 00
Best landscape in oil, work of exhibitor, not heretofore exhibited, Theodore Heiff, Milwaukee.....	8 00
Second best, Theodore Heiff, Milwaukee.....	5 00
Best painting of horse from life, not heretofore exhibited, Theo. Bredweiser, Milwaukee	10 00
Best painting of cow or bull from life, not heretofore exhibited, F. A. Lydston, Milwaukee.....	10 00
Best painting "still life" in oil, F. A. Lydston, Milwaukee.....	10 00
Best marine painting in oil, Theodore Heiff, Milwaukee.....	12 00
Second best, Miss Floy Miner, Janesville.....	8 00
Best fruit piece in oil, F. A. Lydston, Milwaukee.....	5 00
Best pl que painting in oil, Roebel & Reinhardt, Milwaukee.....	5 00
Best oil painting on silk or satin, Mrs G Wood, Stevens Point.....	5 00
Best panel painting in oil, Mrs. C. W. Kellogg, Appleton.....	5 00
Best flower painting in oil, Mrs. M. V. Sheldon.....	5 00
Best figure painting in oil, Frank Enders, Milwaukee.....	5 00
Best collection of oil paintings by Wisconsin artist, not less than 15 pictures, F. A. Lydston, Milwaukee.....	35 00
Second best, Theodore Heiff, Milwaukee.....	20 00
Best collection of oil paintings, not less than 25 pictures, Frank Enders, Milwaukee.....	50 00

Best landscape in water colors, Frank Enders, Milwaukee	\$5 00
Best marine painting in water colors, Miss Fly Miner, Janesville..	5 00
Best figure painting in water colors, Frank Enders, Milwaukee.....	3 00
Best portrait in water colors, F. A. Lydston, Milwaukee.....	3 00
Best fruit in pastel from nature, Miss Nellie Christman.....	3 00
Best collection China painting, Mrs. C. W. Kellogg, Appleton.....	5 00
Best lustre painting, Misses Vilas and Morris, Milwaukee.....	3 00
Best collection of photographs and other sun pictures made by exhibitor, J. Brown, Milwaukee.....	5 00
Best collection of photographic copies of oil paintings, Roebel & Reinhardt, Milwaukee.....	8 00
Best crayon drawing by exhibitor, Miss Nellie Christman, Milwaukee	5 00
Best crayon from photograph, Roebel & Reinhardt, Milwaukee	5 00
Best pencil drawing, Theodore Heif, Milwaukee.....	2 00
Best specimen of charcoal or free hand drawing (work of pupil), Mrs. M. V. Sheldon, Racine,.....	
Best architectural plans (original), Wisconsin Fuel Co., Milwaukee..	8 00
Best exhibit in lithography, Theodore Heif, Milwaukee.....	2 00
Best lava work, Misses Vilas and Morris, Milwaukee.....	5 00

CLASS 62—*Needle Work, Fancy Work and Decorative Arts.*

Best sample plain sewing, embracing the different stitches used in household sewing and repairing, hand made, Mrs. G. B. Allen, Milford	\$3 00
Best set embroidered underclothes, Mrs. A. D. Smith, Burlington...	2 00
Best specimen of hand braid work, Mrs. George Cogswell, Janesville	1 00
Best specimen pillow shams, Mrs. A. D. Smith, Burlington.....	1 00
Best specimen table scarf, Mrs. Geo. Cogswell, Janesville	2 00
Best table spread, E. T. Taylor, Mukwanago.....	2 00
Best wall banner, Hattie Foote, Spring Prairie.....	2 00
Best mantle lambrequin, Misses Vilas and Morris,	2 00
Best window lambrequin, E. T. Taylor, Mukwanago.....	2 00
Best gent's dressing gown, Mrs. Geo. Cogswell, Janesville.....	5 00
Best exhibition of any kind of lace, work of exhibitor, Eliza Clachen Cambridge.....	3 00
Best specimen darned lace, Mrs. Belle Lane, Waukesha.....	2 00
Best specimen etching on silk, satin or linen, Hattie Foote, Spring Prairie	2 00
Best picture embroidery, Miss Bertha Renk, Milwaukee.....	2 00
Best kensington embroidery, Misses Vilas and Morris, Milwaukee...	2 00
Best Chenille embroidery, E. T. Taylor, Mukwanago.....	2 00
Best Arasene embroidery, Mrs. J. Hannam, Trempealeau.....	2 00
Best needle work or floss embroidery, Misses Vilas and Morris, Milwaukee	2 00
Best silk embroidery (hand made), Mrs. Geo. Cogswell, Janesville..	2 00
Best specimen applique embroidery, Amaziah Sherman, Janesville...	2 00
Best toilet cushion, Mrs. Geo. Cogswell, Janesville.....	2 00
Best sofa cushion, Misses Vilas and Morris, Milwaukee.....	2 00
Best ottoman cover, Misses Vilas and Morris, Milwaukee.....	2 00
Best fancy knitting work, Mrs. Geo. Cogswell, Janesville.....	2 00
Best cotton tidy, Miss L. Fiebrantz, Milwaukee.....	1 00
Best tidy (any other kind); Misses Vilas and Morris, Milwaukee.....	1 00
Best raised worsted embroidery, Miss Bertha Renk, Milwaukee.....	2 00
Best silk mittens, Mrs. A. C. Bates, Janesville.....	2 00
Best (hand knit) or crocheted lady's skirt, Mrs. Belle Lane, Waukesha.....	3 00
Best hand knit lady's under vests, Mrs. Steve. Raleigh, Burlington.	3 00
Best collection crochet work, Miss Bertha Ebert, Milwaukee.....	2 00
Best crocheted or knitted slippers or shoes, Mrs. Geo. Cogswell, Janesville.....	2 00

PREMIUM AWARDS.

1 65

Best fire screen, Misses Vilas and Morris, Milwaukee.....	\$3 00
Best set of Doylies, Misses Vilas and Morris, Milwaukee.....	5 00
Best specimen Paris tinting, Misses Vilas and Morris, Milwaukee...	5 00
Best tapestry painting, Misses Vilas and Morris, Milwaukee.....	5 00
Best hand decorated table, Miss Mary Newnham, Oconomowoc....	5 00
Best French embroidery, Misses Vilas and Morris, Milwaukee.....	2 00
Best English crewel painting, Misses Vilas and Morris, Milwaukee..	2 00
Best specimen of drawn work, Misses Vilas and Morris, Milwaukee..	3 00
Best specimen French decorative art, Misses Vilas and Morris, Milwaukee.....	2 00
Best specimen darning in fancy stitches, Mrs. Geo. Cogsville, Janesville.....	2 00
Best Afgan, Mrs. Belle Lane, Waukesha.....	5 00

CLASS 63—*Work of Boys and Girls Under 15 Years.*

Best patch work quilt, Mrs. G. B. Allen, Milford.....	\$3 00
Best sample of plain sewing, Mrs. G. B. Allen, Milford.....	2 00
Best landscape penciling, Mrs. C. H. Root, Ripon.....	2 00
Best doll's outfit made by girl under 13 years, Mrs. C. H. Root, Ripon.....	3 00

CLASS 64—*Domestic Manufacture.*

Best rug of any material, Hattie Foote, Spring Prairie.....	\$4 00
Second best, Mrs. J. Hannam, Trempealeau.....	2 00
Best braided rug, Mrs. John M. True, Baraboo.....	2 00
Best 15 yards rag carpet, Sidney Squire, Wauwatosa.....	2 00
Best woolen stocking, Mrs. G. B. Allen, Milford.....	2 00
Best woolen socks, E. T. Taylor, Mugwanago.....	2 00
Best silk quilt quilted, Mrs. J. R. Kingsbury, Steven's Point.....	4 00
Second best, Mrs. Bell Lane, Waukesha.....	2 00
Best log cabin quilt (not silk, quilted), Mrs. A. D. Smith, Burlington	4 00
Second best, Miss L. Fiebrantz, Milwaukee.....	2 00
Best silk log cabin quilt quilted, Mrs. J. S. Herrick, Madison.....	2 00
Best patch work quilt quilted, Mrs. Delia Parrott, Milwaukee.....	4 00
Second best, Mrs. E. Hoffman, Granville.....	2 00
Best knit counterpane, Wm G. Lenth, Oakwood.....	4 00
Second best, Hattie Foote, Spring Prairie.....	2 00
Best wrought shawl, Mrs. J. Hannam, Trempealeau.....	4 00
Best window or door curtain, Mrs. Emily Carey, Madison.....	2 00
Best exhibition of lady's dress made by professional dressmaker, Miss A. Veitch, Milwaukee.....	4 00
Best specimen of darning, Mrs. G. B. Allen, Milford.....	2 00
Best specimen patched mending, Mrs. J. Hannam, Trempealeau....	2 00
Best and greatest variety of articles of millinery, A. W. Rich & Co., Milwaukee.....	5 00
Best lady's cloak, domestic manufacture, A. W. Rich & Co., Milwaukee.....	4 00
Best lady's sack, domestic manufacture, Mrs. Geo. Cogswell, Janesville.....	3 00

CLASS 63 — *Natural History.*

Best botanical display of noxious weeds of Wisconsin, Mrs. G. B. Allen, Milford.....	\$5 00
Best collection illustrating botany of Wisconsin, E. B. Thomas, Dodge's Corners.....	10 00
Best display Indian relics (stone age), Mrs. M. V. Sheldon, Racine..	5 00

MISCELLANEOUS.

Kellogg school of dress cutting, Miss A. Veitch, Milwaukee	Diploma
Crocheted fly nets, Mrs. Ann Reed, Eau Claire	Diploma

PROCEEDINGS.

EXECUTIVE BOARD MEETING.

AGRICULTURAL ROOMS, MADISON, WIS.

MONDAY, FEBRUARY 6, 7:30 P. M., 1888.

Ex-President Arnold in the chair.

Present, Messrs. Fisher, Doyon, True, Arnold, Clark, Adams, Curtis, Fratt, Boyd, Miner and Newton.

Minutes of last meeting read and approved.

Treasurer Miner read his report accepted at December Society meeting.

Secretary Newton reported an empty treasury.

Mr. Miner moved that Secretary Newton be authorized to rent grounds.

Carried.

On motion of Mr. Fisher all departments were opened to the world.

Board adjourned.

AGRICULTURAL ROOMS, MADISON, WIS.

TUESDAY, FEBRUARY 7, 9 A. M.

Ex President Arnold in the chair.

Present, Messrs. Fisher, Hitt, Doyon, Wilson, True, Arnold, Clark, Adams, Curtis, Fratt, Boyd, Miner and Newton.

Mrs. Vie H. Campbell, of Evansville, presented a request from the Wisconsin Woman's Suffragist Association, that the Wisconsin State Agricultural Society create a special department for Woman's work at State Fair.

On motion the petition was referred to a committee consisting of H. C. Adams, M. R. Doyon and F. L. Fuller, who reported in favor of the establishment of the department,

said department to be under supervision of the Superintendent of Fine Arts, who was authorized to prepare a list of premiums for the work, not to exceed three hundred dollars.

Superintendents of Departments were elected as follows:

- Horses — John M. True, Baraboo.
- Speed — J. G. Boyd, Milwaukee.
- Cattle — A. A. Arnold, Galesville.
- Sheep — C. M. Clark, Whitewater.
- Swine — F. C. Curtis, Rocky Run.
- Poultry — W. Wilson, Wausau.
- Agriculture — Seth Fisher, Center.
- Fruits and Flowers — H. C. Adams, Madison.
- Machinery — A. W. Vaughn, Lodi.
- Manufactures — H. D. Hitt, Oakfield.
- Fine Arts — M. R. Doyon, Madison.
- Gates — N. D. Fratt, Racine.
- Forage — C. T. Fisher, Wauwatosa.
- Marshal — Geo. J. Schoeffel — Milwaukee.

On motion of Mr. True, management of grounds was left to President Sanger, Secretary Newton and Mr. Boyd.

Messrs. Sanger, Newton and Boyd were appointed a committee to arrange speed department.

Committees on arrangement of premium lists for various departments:

- Horses — True.
 - Cattle — Arnold, Doyon, Fisher.
 - Sheep — Clark.
 - Swine — Curtis.
 - Poultry — Wilson.
 - Agriculture — Fisher, Newton and Fratt.
 - Fruits and Flowers — Adams.
 - Manufactures — Hitt.
 - Fine Arts — Doyon.
- Adjourned till 1:30.

2 P. M.

Board called to order,

Mr. Fratt in chair.

Reports of committees on lists for various departments received and accepted.

Date for holding state fair of 1888 fixed at September 17, 18, 19, 20, 21.

The following resolutions were adopted:

Resolved, That the Wisconsin Short Horn Breeders' Association, the Wisconsin Jersey Breeders' Association and the Wisconsin Swine Breeders' Association be allowed to each select an expert judge, to act in awarding premiums in the several classes they represent.

Resolved, That the sum of \$5.00 be allowed each association named above for payment of expenses of procuring such expert judge.

Resolved, That in all other departments or classes, the superintendents be allowed to procure single expert judges when they deem such action advisable, and that the expense of such action shall in no case exceed \$5.00 for each judge so secured.

Resolved, That it is the sentiment of this Board that the President and Secretary (who have the matter of attractions to the fair directly in charge) should restrict expenditures for amusements.

Board adjourned.

SOCIETY MEETINGS.

ELECTION OF OFFICERS.

In accordance with the requirements of the constitution, after due notice by the Secretary, the life members of the Wisconsin State Agricultural Society met at Germania Hall, in Milwaukee, Thursday, September 15, 1887, to elect officers of 1888.

Meeting called to order by Pres. Sanger.

On motion of E. W. Keyes, Miss F. L. Fuller, assistant Secretary, cast one ballot in favor of the re-election of all the old officers. Ex Secretary Babbitt, acting as teller, received the ballot and announced the election of the following officers:

President—Casper M. Sanger, Milwaukee; A. A. Arnold, Galesville, ex-President Wis. S. A. S.

Vice Presidents — Seth Fisher, Center; H. D. Hitt, Oakfield; M. R. Doyon, Madison; Wm. Wilson, Wausau; J. M. Smith, Green Bay; A. W. Vaughn, Lodi; J. M. True, Baraboo; W. A. Johnston, Galesville; Geo. J. Schoeffel, Milwaukee.

Secretary — T. L. Newton, Beaver Dam.

Treasurer — Cyrus Miner, Janesville.

Additional members of the board — C. M. Clark, White-water; H. C. Adams, Madison; A. Ludlow, Monroe; F. C. Curtis, Rocky Run; N. D. Fratt, Racine; S. D. Hubbard, Mondovi; Jas. G. Boyd, Milwaukee; Prof. T. C. Chamberlin, President Wis. Academy Sciences, Arts and Letters; Prof. E. A. Birge, Madison, Sec'y Wis. Academy Sciences, Arts and Letters.

A. A. Arnold, of Galesville, was elected in place of W. A. Johnston, resigned.

The society gave votes of thanks to John L. Mitchell for coming to their aid with money to rebuild hall demolished by storm August 9, and to the officers whose worthy efforts had made the fair of 1887 such an unparalleled success.

Adjourned.

ANNUAL DECEMBER MEETING.

AGRICULTURAL ROOMS,
MADISON, Wis., December 7.

Meeting called to order, with Ex-President Fratt in the chair.

Quorum present.

Treasurer Miner read his report for the fiscal year ending December 7.

On motion of Mr. Ogilvie, W. Jacobs, Jr., J. VanEtta and David Wright were appointed a committee to compare treasurer's statement and warrants with vouchers and books of secretary.

Having duly examined the same, Mr. Jacobs, as chairman of the committee, reported all correct.

Report accepted by the society.

On motion of Mr. Miner, seconded by Mr. Sheldon, the president, secretary and treasurer were authorized to borrow money on credit of the society to pay expenses of the next fair.

Adjourned.

TREASURER'S REPORT.

To the officers and members of the Wisconsin State Agricultural Society:

GENTLEMEN — I hand you herewith a statement of the receipts and disbursements of your society for the year ending December 7, 1887.

Respectfully submitted,

CYRUS MINER,

Treasurer.

MADISON, December 7, 1887.

RECEIPTS.

Amount from 1886.....	\$3,498 53	.....
Amount from sale of land	500 00	.....
Amount from membership	960 00	.....
Amount from rent of ground privileges.....	1,917 55	.....
Amount from entry fees.....	2,647 00	.....
Amount from advertising	215 00	.....
Amount from rent of grounds, Madison	150 00	.....
Amount from rent of grounds, Milwaukee.....	300 00	.....
Amount from sale of tickets	19,744 55	.....
Amount from state appropriation.....	4,000 00	.....
Amount from sale of forage.....	196 60	.....
Amount from Dunham, premium	93 00	.....
Amount from rent of stalls.....	368 00	.....
	\$34,590 23	\$34,590 23

DISBURSEMENTS.

Paid receipted warrants of 1886	\$50 00	.....
Paid receipted warrants for current year.....	33,012 88	.....
	\$33,062 88	\$33,062 88
Balance on hand.....		1,527 35
		\$34,590 23

SECRETARY'S WARRANT ACCOUNT.

No.	To whom and for what issued.	Amount.
1	Newton, T. L. Refunded money used for Society	\$35 00
2	Totto, Miss O., expenses	3 25
3	Fuller, Frank L., December salary	66 67
4	Johnston, W. A., board expenses	6 00
5	Cook, Geo. R., engraving medals	6 02
6	Pritchard, M. E., clerical work	6 01
7	Democrat Printing Co., notice and papers	1 00
8	Atwood, David, paper and advertising	30 50
9	Miner, A. H., advertising fair, 1886	3 00
10	Wind Eclipse Engine Co	50 00
11	Arnold, A. A., board expenses	10 50
12	Pickrell, J. H., Short Horn herd book	4 25
13	Standard Paper Co., merchandise	12 97
14	Mayers, A. A., butter tryer	1 30
15	Newton, T. L. expenses	18 09
16	Dietrich & Adams, office stamp	6 60
17	Newton & Wenz, for T. Hughes, printing	28 00
18	Dietrich & Adams, plate and die	4 25
19	Milwaukee Journal, subscription	2 50
20	Newton, T. L., January salary	150 00
21	Fuller, F. L., January salary	66 66
22	Wilson, W., expenses, February board meeting	15 35
23	Clark, C. M., expenses, February board meeting	11 00
24	Fisher, Seth, expenses, February board meeting	8 00
25	Curtis, F. C., expenses, February board meeting	15 00
26	True, John M., expenses, February board meeting	8 22
27	Smith, J. M., expenses, February board meeting	10 00
28	Haff, H. H., lecture	25 00
29	Vaughn, A. W., expenses, board meeting	6 50
30	Arnold, A. A., expenses to date	26 25
31	Sanger, C. M., expenses, board meeting	15 00
32	Barry, A. C., clerk Department H.	25 00
33	Sumner & Morris, hooks, etc.	4 55
34	Perry, Eli, premium award, 1882	8 33
35	Perry, Eli, premium award, 1882	20 00
36	Sheasby, F. C., painting signs	11 00
37	First Light Battery, expenses fair of 1886	88 88
38	Newton, Secretary, T. L., speakers' expenses	6 25
39	Sherman & Hutchins, printing	4 25
40	Newton & Wenz, telegrams, muslin	4 50
41	Void	
42	Newton, T. L., February salary	150 00
43	Grant, F. C., reporting convention	100 00
44	Fuller, F. L., February salary	66 67
45	Hitt, H. D., expenses February meeting	6 90
46	Peet, S. D., address for convention	10 00
47	Newton, secretary, T. L., American T. A. stock	25 00
48	Newton, T. L., March salary	150 00
49	Fuller, F. L., March salary	66 66
50	Baumgartner, H. J., signs	1 75
51	W. U. Telegraph Co., telegrams	2 05
52	Newton, T. L., April salary	150 00
53	Fuller, F. L., April salary	66 67
54	Hastreiter, R., compiling laws	10 00
55	Newton, T. L., May salary	150 00
56	Fuller, F. L., May salary	66 66
57	Void	

No.	To whom and for what issued.	Amount.
58	Olin, John M., legal services	\$10.00
59	Newton & Wenz, muslin for banners.....	107 38
60	Newton, T. L., June salary.....	150 00
61	Fuller, F. L., June salary.....	66 67
62	Morse, F. C., banners for fair.....	102 90
63	Eastman J. S., tickets as a advertising.....	50 00
64	Eastman, J. S., expenses advertising agent.....	25 00
65	Phelps, F. O., 1,000 mile tickets.....	50 00
66	Phelps, F. O., expenses advertising agent.....	30 00
67	Phelps, F. O., three 1,000 mile tickets.....	75 00
68	Parkinson, John, expenses advertising agent.....	50 00
69	Democrat Printing Co., subscription.....	10 00
70	Democrat Printing Co., 50 copies essay.....	2 75
71	W. U. T. Telegraph Co., telegram.....	4 00
72	Shirley, Henry, carpenter work.....	50 00
73	Shirley, Henry, carpenter work.....	150 00
74	Milwaukee Lithograph Co., advertising matter.....	400 00
75	Phelps, F. O., advertising agent.....	20 00
76	Reinertsen, R. C., survey track.....	11 00
77	Newton, T. L., July salary.....	150 00
78	Fuller, F. L., July salary.....	66 66
79	Boyd, Jas. G., forage.....	100 00
80	Deitrich & Adams, stamp and pad.....	15 45
81	U. S. Express Co., posters, C. O. D.....	25 70
82	Riley & Corcoran, livery.....	6 00
83	Nedecken, H., tassels for tickets.....	7 50
84	Raabe Engraving Co., lithograph of band.....	28 00
85	Boyd, Jas. G., forage and labor.....	71 00
86	Shirley, Henry, carpenter work.....	20 00
87	Merrill, Geo. F., posting advertisements.....	7 00
88	Newton, T. L., August salary.....	150 00
89	Fuller, F. L., August salary.....	66 67
90	Boyd, Jas. G., work on track.....	100 00
91	Shirley, Henry, carpenter work.....	100 00
92	Pilgrim, D. T., bills.....	4 50
93	Baumgartner, H. J., canvassing agent.....	3 00
94	Chicago Horseman, advertising.....	25 00
95	Boyd, Jas. G., Shirley's work.....	50 00
96	Shirley, Henry, carpenter work.....	75 00
97	Shirley, Henry, Copeland roofing.....	55 00
98	Copeland, E. W., roofing.....	10 00
99	Butterworth, T., advertising.....	15 00
100	Rt. Hard's, Grif, first money, three-minute race.....	250 00
101	Clarke, F. D., second money, three minute race.....	125 00
102	Davis, P. H., third money, three minute race.....	75 00
103	Mitchell, John L., fourth money, three minute race.....	50 00
104	Rood, E. E., first money, three minute race.....	250 00
105	Creveling, M. F., second money, three minute race.....	125 00
106	Edgewood Stock Farm, premium.....	75 00
107	Shuler, V. S., premium.....	50 00
108	Clasen, C., premium.....	250 00
109	Cole, H. W., premium.....	125 00
110	Flack, J. W., premium.....	75 00
111	West, Geo. W., premium.....	50 00
112	Pillips, J. P., water tank.....	25 00
113	Locke, S. H., judge swine.....	5 00
114	Joiner, A. E., judge swine.....	5 00
115	Thomas, J. W., Chippewa county delegate.....	21 90
116	Jansen, L. A., superintendent of electric light.....	38 75
117	Congdon, G. B., Dodge county delegate.....	9 78
118	Brooks, Seymour, judge sheep.....	5 00
119	Hill, C. O., judge sheep.....	2 00

TREASURER'S REPORT.

No.	To whom and for what issued.	Amount.
120	Quau, S. M., Marathon county delegate	\$18 00
121	McMurphy, G. W., Pierce county delegate	26 30
122	Eaton, T. H., Green county delegate	14 30
123	Stafford, C. M., Pierce county delegate	27 80
124	Wylie, G. O., Lodi fair delegate	16 00
125	Ellinwood, A. P., Baraboo delegate	14 52
126	Curtis, F. C., lumber	1 75
127	McKenzie, J. J., Grant county delegate	20 80
1 8	Alling, A. M., Ozaukee county delegate	9 80
129	Carey, John, Blakes Prairie delegate	21 40
130	Stanchfield, S. B., Grant county delegate	11 84
131	Rox, W. P., Wasington county delegate	10 10
132	Busnell, S. N., Portage county delegate	19 00
133	Porter, Hug, Crawford county delegate	21 25
134	Hineman, M. L. E., Monroe county delegate	17 24
135	Dey, John, Outagamie county delegate	17 92
136	Ellis, John, Marquette county delegate	15 20
137	Cady, H. P., Brown county delegate	12 54
138	Owen, David, Columbia county delegate	13 64
139	Cravat, C. D., premium	50 00
140	Carter, F., premium	25 00
141	Kinney, W., premium	15 00
142	Hildebrand, F., premium	10 00
143	Hardy, S. W., assistant poultry department	6 00
144	Conrad, F., Waupaca county delegate	17 20
145	Cox, G. G., S. W. Ind. delegate	10 00
146	Hohlm, L. W., Adams county delegate	16 94
147	O'Neill, Jas., Clark county delegate	22 10
148	Thomas, R. E., private detective	15 00
149	Nash, John M., St. Croix county delegate	27 98
150	Gale, Isaac, Waukesha county delegate	7 20
151	Wyman, O. B., Vernon county delegate	26 30
152	Porter, C. W., Juneau county delegate	13 68
153	Arnold, A. A., attending state fair	12 00
154	Corrigan, J. E., premium	250 00
155	Grant, Nathan, check baggage	10 00
156	Roberts, E. G., first assistant poultry	15 00
157	Haney, John L., Kewaunee county delegate	13 86
158	Shuler, V. S., premium	125 00
159	Palmer, J. V., premium	75 00
160	Gowan, Chas., Langlade county delegate	22 48
161	Sanger, C. M., premium	250 00
162	Waters Stock Farm, premium	125 00
163	Johnston, W. A., superintendent cattle	40 00
164	Pratt, W. A., judge cattle	5 00
165	Breese, Allen, assistant cattle department	28 00
166	Sheldon, S. L., Dane county delegate	13 76
167	Wilson, Wm., superintendent poultry	57 25
168	Rice's Cream City quartette, music	42 00
169	Void	
170	Dillon Bros., premium	223 00
171	Dillon Bros., premium	64 00
172	Fisher, Seth, superintendent agricultural department	28 00
173	Butcher, E. G., equestrian exhibit	300 00
174	Palmer, C. C., Taylor county delegate	22 40
175	Finn, W. W., Barron county delegate	28 72
176	Patterson, May, entry clerk	16 00
177	Gordon, R. B., services	10 00
178	Hand, J. F., Price county delegate	24 02
179	Wright, D. E., premium	22 00
180	Benham, F. N., premium	22 00
181	Odell, L. L., Trempealeau county delegate	24 24

No.	To whom and for what issued.	Amount.
182	Whiteman, Joel, Iona county delegate.....	\$13 00
183	Merriman, C. W., gate attendant.....	17 50
184	Millett, C. O., gate attendant.....	17 50
185	Clark, C. M., superintendent sheep.....	36 00
186	Keayon, S. J., assistant superintendent agriculture.....	21 00
187	Strueder, Wm., rent show case.....	10 00
188	Thompson, C., premium.....	250 00
189	Curry, R. E., premium.....	250 00
190	Johnson, P. V., premium.....	75 00
191	Rood, E. E., premium.....	50 00
192	Clasen, C., premium.....	125 00
193	Smith, E. H., premium.....	75 00
194	Rood, E. E., premium.....	250 00
195	Shuler, V. S., premium.....	125 00
196	Curtis, F. C., premium.....	40 00
197	Void.....	
198	Waters Stock Farm, premium.....	125 00
199	Creveling, M. F., premium.....	50 00
200	Maynard, S. A., premium.....	75 00
201	West, Jr., S. G., gate attendant.....	17 50
202	Beer, R., livery for superintendents.....	13 00
203	Milwaukee Lithograph Co., diplomas and lithographs.....	1,052 87
204	Blake, Ed., gate attendant.....	17 50
205	Blake, Fred., post bills, Racine.....	3 00
206	Long, John, rent of tent.....	20 00
207	Fratt, N. D., per diem expense.....	89 20
208	Pember, R. T., Rock county delegate.....	8 20
209	Void.....	
210	True, Gordon H., assistant horse department.....	10 00
211	True, John M., superintendent horse department.....	63 40
212	Barry, M. A., assistant superintendent horse department..	17 50
213	Marsland, Thos H., gate attendant.....	17 50
214	Fitzgerald, H. M., gate attendant.....	17 50
215	Crowl, O. H., superintendent grounds.....	68 00
216	Stang, L., use of tent.....	25 00
217	Anrus & Thayer livery.....	41 00
218	Pfeffer, G. P., superintendent fruit department.....	38 60
219	Pfeffer, G. P., material for department G.....	59 28
220	Pfeffer, Wm., services in fruit department.....	21 00
221	Halligan, Annie, clerk.....	30 00
222	White, C. W., board as per bill.....	110 00
223	Lamp, R. M., entry clerk.....	27 00
224	Whitett, John, Jefferson county delegate.....	10 68
225	Hut, H. D., superintendent manufacturers' department....	48 00
226	Pichard, M. E., clerk.....	40 00
227	McGinnis, A. B., assistant manufacturers' department....	17 50
228	Jeffrey, Henry, labor.....	11 00
229	Gunnerson, P. H., labor.....	30 00
230	Wells, Sid, labor.....	24 00
231	Slator, Vet., labor.....	49 00
232	Phillips, A. F., clerk speed department.....	31 00
233	Vaughn, A. W., expense machine department.....	16 65
234	Ayer, H. M., labor.....	17 50
235	Schoeffel, G. J., police and watch.....	331 00
236	Hart, W., straw.....	55 85
237	Boom, Wm., toilet room attendant.....	20 00
238	N. W. Fuel Co., coal.....	36 27
239	Rumrel, Fred, carpenter work.....	1 50
240	Vaughn, A. W., expense and per diem.....	75 00
241	Shirley, Henry, balance on contract.....	1,061 53
242	Void.....	

TREASURER'S REPORT.

77

No.	To whom and for what issued.	Amount.
243	Newton & Wenz, account to date.....	\$77 52
244	Buening & Co., feed.....	188 57
245	Pilgr m. D. T., hay.....	75 67
246	Stickney & Co., hay and straw.....	112 55
247	Grover, E. J., hay.....	34 46
248	Fisher, C., hay.....	151 35
249	Rog-ers, E., straw.....	102 76
250	N. W. Stamp Works, badges.....	25 00
251	Pilgrim, J. H., assistant forage.....	31 50
252	Foley Bros., straw and hay.....	444 53
253	Pilgrim, D. F., superintendent forage.....	18 00
254	Swan, W., hay.....	242 70
255	Greengo, Nelson, oats.....	17 90
256	Jeffrey, H. M., hauling manure.....	16 00
257	Jeffrey, Chas. T., hauling manure.....	12 00
258	Pilgrim, D. T., superintendent forage.....	36 00
259	Wisconsin Planing Mill, account rendered.....	916 59
260	Pilgrim, D. T., balance due as per bill.....	160 00
261	Schoffel, G. J., balance on electric light.....	8 50
262	Boynton, A. L., livery.....	68 00
263	Pilgrim, D. T., superintendent forage.....	60 00
264	Schoffel, G. J., marshal and police.....	245 10
265	Ganes, J. W., clerk.....	24 00
266	Poichard, M. E., clerk.....	2 00
267	Newton, Secretary T. L., incidental expense.....	20 00
268	Parkinson, J. M., clerk.....	40 00
269	Soubler, A., bill posting.....	2 00
270	Dunton's Spirit of the Turf, advertising.....	25 00
271	Sanger, C. M., premium.....	121 00
272	Sanger, C. M., rent, hall for election.....	15 00
273	Cramer, Aikens & Cramer, advertising.....	10 00
274	Munger & Coburn, ticket boxes.....	6 00
275	Peff-er, Wm., night watch.....	10 00
276	Miner, C., Treasurer, treasurer's clerks.....	249 50
277	Miner, C., Treasurer, expense and sundries.....	72 64
278	Miner, C., Treasurer, hotel bill.....	15 78
279	Miner, C., Treasurer, attendance and expense fair.....	42 70
280	Welch, Wm., amphitheater attendance.....	12 00
281	Potts, S. D., gate attendant.....	15 00
282	Main, A. H., cashier and treasurer's assistant.....	53 10
283	Calkins, G. J., gate attendant.....	17 50
284	Flanders, J. F., gate attendant.....	17 50
285	Robertson, A. J., gate attendant.....	17 50
286	Arnt, E. A., gate attendant.....	17 50
287	Little, Geo., gate attendant.....	17 50
288	Arne, W. H., gate attendant.....	10 00
289	Hunter, Frank, gate attendance.....	17 50
290	Charnley, Isaac, gate attendant.....	17 50
291	Meyers, Peter, Windon's advertising.....	2 00
292	Pierson, M. W., posting bills.....	3 00
293	Kelly, John, premium.....	50 00
294	M Dowell, H. C., judge speed.....	25 00
295	D-uster & Co, advertising.....	8 80
296	Ho-ard, W. D., advertising.....	4 00
297	Breeder's Gazette, advertising.....	25 00
298	Herold Co., advertising.....	10 75
299	Milwaukee local, advertising.....	15 30
300	Smart, R. D., Manitowoc delegate.....	15 00
301	Atwood, A. J., premium.....	12 00
302	Annandale Live Stock Co., premium.....	217 00
303	Acker, G+o., premium.....	22 00
304	Atkin, Elvin, premium.....	10 00

No.	To whom and for what issued.	Amount.
305	Angell, C. E., premium.....	\$78 00
306	Abbott Buggy Co., premium.....	10 00
307	Allen, S. L., premium.....	5 00
308	Allen, Mrs. G. B., premium.....	15 00
309	Blodgett, A. Z., premium.....	8 00
310	Boyd, Jas. G., premium.....	25 00
311	Bolton, Jas., premium.....	45 00
312	Baker & Son, Geo., premium.....	287 00
313	Brace, D. H., premium.....	13 00
314	Baker & Son, J. B., premium.....	143 00
315	Void.....	
316	Bartlett, J. T., premium.....	13 00
317	Bowers, Henry, premium.....	5 00
318	Haird, Sam, premium.....	18 00
319	Bates, Mrs. A. C., premium.....	5 00
320	Bracken, Mrs. M. L., premium.....	6 00
321	Beck, John, premium.....	5 00
322	Browning, King & Co., premium.....	6 00
323	Brown, J., premium.....	8 00
324	Breidweier, Theo., premium.....	10 00
325	Corrigan, J. E., premium.....	15 00
326	Cameron, S. G., premium.....	8 00
327	Clapp, I. J., premium.....	168 00
328	Cupple, Chas., premium.....	58 00
329	Crawford, J. N., premium.....	58 00
330	Craig, Perry, premium.....	59 00
331	Craig, A. H., premium.....	25 00
332	Collard, Charles, premium.....	33 00
333	Cass, J. D., premium.....	98 00
334	Coe & Converse, premium.....	5 00
335	Curtis, F. C., premium.....	20 00
336	Cross, I. B., premium.....	4 00
337	Parkinson, J. M., advertising.....	33 00
338	Boyd, Jas. G., expense spec department.....	62 86
339	Hensler, Prof., juvenile band.....	175 00
340	Kentzler, And., livery.....	5 50
341	Mathew Bros., tables and stools.....	14 20
342	Cribb, Geo. C., rubber belt.....	12 00
343	Packard, O. L., wood pulley.....	5 97
344	Gross, Philip, account as per bill.....	6 45
345	W. U. Tel. Co., dispatches.....	8 95
346	N. W. Oil Co., castor oil.....	2 10
347	Forster Lumber Co., lumber.....	4 90
348	Cogswell, Mrs. Geo., premium.....	21 00
349	Doyon, M. R., superintendent fine arts.....	40 00
350	Atwood, David, subscription and advertising.....	12 00
351	Creighton, Mrs., premium.....	2 00
352	Cribb, Geo. C., premium.....	10 00
353	Cary, Mrs. Emily, premium.....	2 00
354	Clactan, Eliza, premium.....	3 00
355	Christman, Miss N., premium.....	8 00
356	Void.....	
357	Downs, L., premium.....	20 00
358	Eastman, John S., premium.....	8 00
359	Durand, H. S., premium.....	38 00
360	Dauber, G. H., premium.....	55 00
361	Donnal, D. H., premium.....	31 00
362	Daniels, E. W., premium.....	2 00
363	Deerfield & Warner, premium.....	74 50
364	Dey, John, premium.....	10 00
365	Domestic S. M. Co., premium.....	10 00
366	Dart, W. A., premium.....	8 00

TREASURER'S REPORT.

No.	To whom and for what issued.	Amount.
367	Erjensbeck, Jo n. premium.....	\$3 00
368	Ebert, Miss Bertha, premium.....	2 00
369	Enders, Frank, premium.....	87 00
370	Flack, J. W., premium.....	10 00
371	Void.....	
372	Racine Agriculturalist, premium.....	50 00
373	Hacker & Co., T. L., premium.....	174 00
374	Ferrick, Wm, premium.....	10 00
375	Fisher, Seth, premium.....	73 00
376	Fowler, B. T., premium.....	46 00
377	Feebrautz, Chas., premium.....	3 50
378	Fox, Wm., premium.....	44 00
379	Finch, Lovin, premium.....	3 00
380	Fisher, Mrs. C. T., premium.....	18 00
381	Fisk, Mrs. Dr., pr-mium.....	8 00
382	Foote, Hattie, premium.....	13 00
383	Fidler, Mrs. A. J., premium.....	4 00
384	Felt, J. H., premium.....	2 00
385	Frankfurth & Co., premium.....	5 00
386	Feebrantz, Mrs. L., premium.....	3 00
387	Graves, J. W., premium.....	15 00
388	Galbraith Bros., premium.....	248 00
389	Gilman, J. A., premium.....	45 00
390	Gilbert, W. L., premium.....	5 00
391	Gillett & Moore, premium.....	188 00
392	Gordon, Mrs. G. E., premium.....	103 00
393	Wisconsin Planing Mill Co., premium.....	331 92
394	Griffith, C. N., premium.....	79 00
395	Gillett, Eugene, premium.....	34 00
396	Glass, W. L. premium.....	10 00
397	Eastman, J. S. advertising and expenses.....	80 47
398	Gale, Isaac, & Son, premium.....	6 00
399	Greenman, C. H. premium.....	2 00
400	Green, C. H., premium.....	19 00
401	Grover, Henry J., premium.....	6 00
402	Guenther, Wm., premium.....	6 00
403	Gilbert, J. D., premium.....	3 00
404	Gumber, Christ, premium.....	12 00
405	Groeschel, Wm., premium.....	3 00
406	Hopkins, Jas., & Son, premium.....	10 00
407	Hendee, C. C., premium.....	15 00
408	Human, B., premium.....	10 00
409	Hardy, W. H., premium.....	12 00
410	Newton, T. L., September salary.....	150 00
411	Fuller, F. L., September salary.....	66 67
412	Everly, J. M., cards for marshal.....	5 50
413	Jacobs, Will, premium.....	200 00
414	Railway Telegraph Supply Co., ex- re-s as per bill.....	3 11
415	Wisconsin Telephone Co., wire and line.....	14 96
416	Brabazon, J. R., premium.....	148 50
417	Heiss, Theo., premium.....	49 00
418	Park, E. H., premium.....	73 00
419	Schurman, G. H., premium.....	54 00
420	Harding, Geo., premium.....	196 00
421	Hickey, J. E., premium.....	28 00
422	Hazen, Chester, premium.....	209 00
423	Hoover, J. L., premium.....	56 00
424	Hill, Cl as., premium.....	52 00
425	Hughes, H. D., premium.....	38 00
426	Humphrey, Albert, premium.....	30 00
427	Haines, G. H., premium.....	41 00

No.	to whom and for what issued.	Amount.
428	Peffer, Kate F. Assistant Fine Arts.....	\$17 50
429	Asch, Mrs. Paul, Assistant Fine Arts.....	10 00
430	Peffer, Kate F., premium.....	10 00
431	Hay, A. J., premium.....	4 00
432	Holt, M. A., premium.....	1 00
433	Hirsinger, C., premium.....	18 00
434	Hannan, Mrs. S., premium.....	20 00
435	Hubbard F. G., premium.....	25 00
436	Hansen's Fur Factory, premium.....	13 00
437	Lowell Mfg Co.....	9 00
438	Hoyt, F. E., premium.....	5 00
439	Huffman, Mrs. E., premium.....	2 00
440	Heir ck, Mrs. J S, premium.....	4 00
441	Welch, J. E., premium.....	71 00
442	Wait & Son, E., premium.....	92 00
443	Jones, Sam, premium.....	41 50
444	Jones Isaac, premium.....	5 00
445	Jeffrey, Geo., premium.....	67 00
446	Kellogg, Rufus B, premium.....	16 00
447	Klein, Geo.....	18 00
448	Kingman, R. S., premium.....	76 00
449	Kingsley, Mrs. C. C., premium.....	22 00
450	Kellogg, Geo J, premium.....	24 00
451	Kinsbury, Mrs. P. R., premium.....	4 00
452	Kellogg, Mrs C. W., premium.....	10 00
453	Long, John, premium.....	113 00
454	Lehman, Mrs. A. W., premium.....	9 50
455	Leon ardt, C., premium.....	3 00
456	Lain, Miss Belle, premium.....	12 00
457	Lydston, F. A., premium.....	63 00
458	Roberts, E. G., premium.....	75 50
459	Rawson, L., & Son, premium.....	159 00
460	McKinney, H. D., premium.....	15 00
461	Mathews, E. P., premium.....	8 00
462	Mill, R H., premium.....	49 00
463	McKerrow, Geo., premium.....	135 00
464	Halligan, Annie, clerk.....	6 00
465	Morse, L. C. Monroe county delegate.....	14 20
466	Mansfield, Wm., premium.....	2 50
467	Maloney, J. L., premium.....	3 00
468	McCaffrey, Hugh, premium.....	6 00
469	Matthews Bros., premium.....	26 00
470	Mandt, T. G., premium.....	24 00
471	Milwaukee Buggy Co., premium.....	8 00
472	Munn, W. H., premium.....	15 00
473	Minor, Miss Floy, premium.....	21 00
474	Nye, Mrs. Edwin, premium.....	2 00
475	Newnam, Mary, premium.....	5 00
476	Ogilvie, Robert, premium.....	70 00
477	Ormond, W. M., premium.....	28 00
478	Potter, W. H., premium.....	10 00
479	Pabst, Fred., premium.....	109 00
480	Pilgrim, D. T., premium.....	64 00
481	Parrot, Mrs. Delia, premium.....	4 00
482	Pitcher, J. H., premium.....	30 00
483	Pease, M. F., premium.....	20 00
484	Richards, Griffith, premium.....	63 00
485	Remus, Chas., premium.....	12 00
486	Randall Bros., premium.....	53 00
487	Rust Bros., premium.....	76 00
488	Reisk, Niss Bertha, premium.....	4 00
489	Ringrose, Geo. W., premium.....	48 00

TREASURER'S REPORT.

81

No.	To whom and for what issued.	Amount.
490	Root, Mrs. C. H., premium.....	\$45 05
491	Ried, Wm., premium.....	48 00
492	Raleigh, Mrs. Steve, premium.....	16 00
393	Rich & Co., A. W., premium.....	9 00
494	Roebel & Reinhardt, premium.....	18 00
495	Rood, Mrs. G., premium.....	5 00
496	Stroup, Geo., premium.....	16 00
497	Shaw, C. H., premium.....	20 00
498	Stoltz, H. L., premium.....	25 00
499	Stilson Bros., premium.....	134 00
500	Scoville & Son, J. M., premium..	59 00
501	Stellop, Henry, premium.....	62 00
505	Sheldon, Mrs. M. V., premium.....	51 50
503	Swan, E. A., premium.....	14 00
504	Sherman, Amaziab, premium.....	7 00
505	Stran, Mrs. O. J., premium.....	11 00
506	Severt, Chas., premium.....	3 00
307	Smith, Thos. C., premium.....	18 00
508	Steelz & Walker, premium.....	8 00
509	Sweet, B. F. & H. W., premium.....	6 00
510	Studebecker Bros, premium.....	8 00
511	Squire, Sidney, premium.....	4 00
512	Smith, Mrs. A. D., premium.....	11 00
513	Mitchell, John L., loan.....	3911 62
514	Taylor & Nelson, premium.....	10 00
515	Thomas, E. E., premium.....	35 00
516	Tratt, F. W., premium.....	61 00
517	Toole, Wm., premium.....	4 00
518	Tuttle, A. G., premium.....	70 00
519	Taylor, Chas. N., premium.....	3 00
520	Trowbridge Bros., premium.....	23 00
521	True, Mrs. John M., premium.....	3 00
522	Taylor, E. T., premium.....	8 00
523	Valerius & Co., Dr., premium.....	55 00
524	Vesper, A., premium.....	35 00
525	Voland, Chas., premium.....	1 00
526	Veitch, Miss Anna, premium.....	4 00
527	Vilas, Morris, premium.....	46 00
528	Warren & Sons, Geo., premium.....	27 00
529	Waters, Frank A., premium.....	25 00
530	Williams, J. J., premium.....	148 00
531	Whitnell & Co., premium.....	14 00
532	Ward, Elmer G., premium.....	38 00
533	Wynoble, C., premium.....	20 00
534	West, H. P., premium.....	70 00
535	Ward, Mrs. E. G., premium.....	7 00
536	Western Union Telegraph Co., telegrams.....	1 25
537	Wood, Henry, premium.....	2 00
538	Wisconsin Fuel Co., premium.....	8 00
539	Thompson, Kohler & Co., premium.....	10 00
540	Sentinel Co., advertising.....	19 25
541	Fair Publishing House, entry books.....	10 00
542	Townley, Mrs. W. J., president's clerk.....	12 00
543	Rundle, Spence & Co., gas pipe.....	444 43
544	Josten, J., numbering sheds.....	15 46
545	Creighton, Mrs. J. R., premium.....	5 00
546	Rich. A. W., & Co., premium.....	10 00
547	Rundle, Spence & Co., pipes.....	4 76
548	Miner, Cyrus, redeemed dinner tickets.....	16 67
549	Miner, Cyrus, redeemed dinner tickets...	298 33
550	Bradberry, Nathan, fair work.....	9 00
551	Void.....	

No.	To whom and for what issued.	Amount.
552	Rickert, F. W. & Co., painting sign.....	\$10 00
553	Boom, William, toilet room attendant.....	3 00
554	Hathaway, M. P., electric light work.....	15 00
555	Miller, Anthony, work fine art.....	5 00
556	Clarke, F. D., premium.....	50 00
557	Hastreiter, Robt., work at fair.....	30 09
558	Neumiller, Geo., dinner tickets.....	15 67
559	Sanborn & Haisler, ice.....	7 80
560	Henwood, V. A., watchman.....	10 00
561	Edgerton, S. R., Walworth county delegate.....	11 36
562	Pierce, N. F., Sheboygan county delegate.....	11 12
563	Fisher, Mrs. C. T., premium.....	2 00
564	Whelan, J. W., Buffalo county delegate.....	24 00
565	Gross, Philip, shovel, etc.....	3 55
566	Western Farmer, circulars and advertising.....	21 20
567	Wood, N. J., assistant marshal.....	16 00
568	Milwaukee Journal, subscription.....	3 75
569	Western Union Telegraph Co.....	2 79
570	Riley & Corcoran, livery.....	1 50
571	Ferris, Eugene, drayage.....	1 25
572	Milwaukee Sentinel, reporting and advertising fair.....	50 00
573	Harris & West, premium.....	90 90
574	Saxton, Chas. A., premium.....	9 10
575	Brace, D. H., premium.....	5 00
576	Newton, T. L., October salary.....	150 00
577	Fuller, F. L., October salary.....	66 66
578	Wisconsin Planing Mill, lumber.....	62 38
579	Roebel & Reinhardt, fine art work.....	25 00
580	Lydston, F. A., fine art work.....	5 00
581	Swain & Tate, printing.....	15 00
582	Boyd, James G., taxes Cold Spring grounds.....	150 00
583	Matthews Bros., office stool.....	2 75
584	Frankfurth, Wm., locks, nails, etc.....	5 37
585	Weil, Benj. M., insurance on buildings.....	344 37
586	Allen, H. P., unpaid claim, 1878.....	10 00
587	Newton, Secretary T. L., rent Cold Spring grounds.....	250 00
588	Newton, Secretary T. L., expenses as per bill.....	51 78
589	Void.....	
590	Newton, Secretary T. L., advertising and office expense....	197 46
591	Packard, O. L., balance due on bill.....	1 99
592	Newton, T. L., November salary.....	150 00
593	Fuller, F. L., November salary.....	66 67
594	Zimmerman, H. W., engines for fair.....	60 00
595	Yewdale & Son, J. H., print and lick.....	115 06
596	Sheldon, S. L., moving fence.....	30 75
597	Miner, Floy, treasurer's clerk.....	5 00
Total amount of orders paid.....		\$33,012 88
Paid orders of 1886.....		50 00
		<u>\$33,062 88</u>

Orders No. 199, 354, 367, 368, 409, 431, 439, 491, 506, 538, 592, 593 and 594, amounting to \$411.67, not presented at date of this report.

PROCEEDINGS

OF THE

FARMERS' CONVENTION.

Held at Madison, Wis., Commencing Tuesday, February 7, 1888.

7:30 P. M.

Ex-President A. A. Arnold in the chair.

The Chairman— I am sorry to say this evening that President Sanger is necessarily absent in California; therefore we can have no remarks from him, and will not have the pleasure of seeing him during the convention. I am also sorry to say that Governor Rusk is ill and unable to be here, notwithstanding his desire to do so, and him we shall also miss. But I hope we may have a profitable convention; and I, for one, am glad to see so many familiar faces here on the opening of the convention. I presume we will pursue the customary way of allowing a limited discussion after every paper or address. I think we will also pursue the ordinary custom of reporting the resolutions to a committee that may be appointed, which, in due time, will report, and then action can be taken on the report.

The object of the discussions directly after a paper is, for the purpose of considering it while the subject matter is fresh in our minds. Some speakers may exhaust the subject so as to provoke no discussion. Others will bring out discussion. So we may not judge of the merits of a paper or address by the discussion, because some subjects are handled differently from others.

The first address this evening will be from Professor T. C. Chamberlin, of the State University, whom I now have the pleasure of presenting to you.

THE NEW RELATIONS OF THE UNIVERSITY TO
AGRICULTURE.

BY T. C. CHAMBERLIN, PRESIDENT OF WISCONSIN UNIVERSITY.

Mr. President, Gentlemen of the Convention, Ladies and Gentlemen:

It has been commonly thought to be the prime aspiration of an ideal university to teach all higher knowledge. It is manifestly impossible to completely attain to this, but it has been the ideal towards which endeavor has been directed. The idea of universality, which the term university carries with itself, has been associated with the scope of instruction which it offers rather than with the breadth of its educational influence in the community tributary to it. It has been its ideal to teach all higher knowledge to such as came to its halls rather than to teach higher knowledge to all the people.

A new ideal is rising into recognition, namely, that it is also the function of a university to seek an all-pervasive educational influence upon its patron community. It is doubtless impossible to completely attain to this, but it is no more impracticable to extend the popular range of university education than to extend the sweep of the university courses. It can hardly be more daring to hope for the higher education of the masses to-day than it was to contemplate the common education of the masses a few centuries ago. The latter has been practically accomplished. Our efforts may now well turn toward the former.

To teach all higher knowledge to some, and to teach some higher knowledge to all, with accompanying and corresponding training, constitute the newer phases of university effort. It finds perhaps its best expression in the English universities in the movement known as "University Extension," which is essentially an effort to carry higher instruction forth to the people by means of systematic lectures in connection with local organizations. Our Teachers' Institute lectureship is a movement in a somewhat similar line,

and our Farmers' Institutes are a more striking and effective instance than even the English movement.

A part of this broadening of the work of the university has already been accomplished. A very considerable range of learning is offered to those who place themselves under its instruction; and, on the other hand, some considerable progress has been made in the general dissemination of advanced knowledge, but it is obvious that the field which remains wholly untouched in both directions is vast.

Recognizing this breadth of function of the ideal university, we may turn to the consideration of our special relations to agricultural education.

That which may be designated new in the relationship of our University to agriculture, does not consist wholly in the appointments themselves, but rather in the new relations into which they now come. The larger number of the measures to which attention will be directed are of recent introduction, though not in the strictest sense new, but they are now joining themselves together into an organic system, which is in itself essentially new.

The courses of instruction in agriculture here and elsewhere have heretofore been largely of the composite kind. They have included not only instruction in agriculture and in the sciences necessarily connected with it, but also in mathematical, literary and other branches which have no immediate bearing upon agriculture. The value of these other studies is not to be questioned, but their introduction with the agricultural branches has rendered the course prolonged and too expensive in time and means for the average boy who looks forward to being a farmer. On the other hand, these courses have generally not been sufficiently extensive and thorough-going in the agricultural and allied sciences to produce professional agricultural experts. In short, these courses have not been specifically adapted either to farmers, on the one hand, or to agricultural scientists, on the other; and these are the two classes which are to advance agriculture. The profession will be improved either by those who engage in it as their life work

as practical farmers, or those who with a like devotion make it their life work to develop agricultural science.

If we look to other professions for suggestions, it will be observed that out of their longer experience in developing their respective educational systems, there have arisen highly specialized courses, devoted exclusively to the subjects embraced within the professions. In our law schools, almost without exception, the subjects are those which specifically relate to legal practice. So also in medical schools, the course of study embraces only those subjects which are immediately tributary to the profession of medicine. In the courses in engineering, it is true, a somewhat wider range of study is usually introduced, because engineering practice involves a general command of mathematics and of physical science.

In our University the earlier attempts were in the line of composite courses of study. The limited measure of success which attended them, you know better than I. Our present effort is a departure from this, and a differentiation in two directions. The first takes the form of a short, purely professional course of instruction, crammed as full as may be with that teaching which is most immediately useful to the young men as they go back to the farm. The effort is to give the greatest practical amount of useful knowledge in the shortest possible time, and at the least expense. The effort is to prepare farmers' boys for more intelligent and more productive farmer's work. This is the "Short Course," which we hope to improve from year to year as experience may dictate and patronage may warrant.

The other line of effort has for its object the production of agricultural scientists. It necessarily involves a protracted course of study, embracing not merely special agricultural subjects, but allied sciences and disciplinary training in scientific methods and manipulations, and thorough familiarity with methods of investigation and with the laws of correct inference and safe reasoning. Our "Long Course" has been recast with this end in view, and to it will be added the resources of the Experiment Station, which will afford excellent facilities for advanced professional work.

The intelligent young men of our farms, who have in re-

cent years drifted away into the over-crowded professions of the city, have made a notable mistake. In the line of the calling to which they were born there were greater professional possibilities, inviting them to higher, and perhaps equally lucrative professions, which they failed to foresee and prepare for. At the present time there is probably greater demand for expert talent in the line of agricultural science than in almost any other. There are lucrative and noble positions in almost every state of the union calling for trained agricultural scientists. The opportunity to prepare for these desirable positions has lain unnoticed and neglected by our young men, who now find themselves struggling for position in the over-crowded professions. The opportunity remains open; the field is ripening to the harvest and calls for reapers, and our University opens its doors and invites young men with talent, industry and ambition to come and prepare themselves for positions of the highest usefulness and honor, with a goodly measure of financial compensation.

There is, however, a radical defect in all existing systems of agricultural education. It is the lack of complete agricultural science. It may be stated more strongly than that: the lack of any approach to complete and thoroughly tested knowledge covering the broad field of agriculture. Very much indeed is known, and the value of this, as compared with its absence, is incalculable, but very much more remains to be learned, and the measure of the value of this is practically infinite. A large part of the teaching in agriculture has consisted, necessarily, of the expression of opinion, or the statements of half-proven truths, or the detail of experiments which cover a part of the ground only and leave room for doubt on many points. The statements and discussions of opinions are interesting for a time, but they fail to give permanent satisfaction. Solid, thoroughly tested knowledge alone gives full satisfaction to the mind; and I think it may be safely said that no really fascinating, permanently attractive course of study has ever been instituted which did not have in itself a large measure of well

accepted truth — either demonstrative science, or dogmatic doctrine received and dealt with as if it were known truth.

To make our educational systems effective, and to enable them to command the permanent affection and abiding interest of students, we must increase the amount of knowledge. We must equip them with solid substance of doctrine and of science. This is another way of saying that we must extend the domain of agricultural science. We must test current doctrines until there shall be no longer room for doubt or question respecting them; so that we may present to our students not only truth, but the evidence of it, that they may rest their confidence securely in the trustworthiness of our instruction.

More than this, we must make our students partners with us in investigation. In the absence of known truth, the best substitute is the ability to find out the truth; in a lack of a developed agricultural science, the best substitute is a training in the methods of developing the science. Experimentation must for the time being perform a large function in a satisfactory agricultural course.

It is obvious, therefore, that an important function of a university, assuming to do its duty toward agriculture, lies in experimentation. This is at present the great effort of our institution. The Experiment Station is the heart and soul of the agricultural department, absorbing the greater measure of its resources, and giving forth the greater measure of satisfactory fruitage. With the work which has been done, and its beneficent influence, you are more familiar than I. The Station is now about to come into possession of enlarged facilities and resources, and, it is fondly hoped, will enter upon a new stage of development, marked by an increase both in the range and completeness of its results. The recent appropriation of \$15,000 a year by the liberality of congress, added to the facilities already possessed, ensure the necessary means for effective work.

But time is a necessary condition of good results. However excellent the facilities, however ample the means, prolonged and careful testing alone can produce trustworthy results. The patience of those who experiment will be well

tried, and the patience of those who await the result, will doubtless be much more sorely tried, and I beseech as large an exercise of it as lies within your command.

This necessary tardiness in reaching results, suggests another shortcoming in most systems of agricultural education, namely their slowness and exclusiveness. Practically, none but the young can attend our schools, and but a small percentage of these can enter our agricultural colleges; and if our educational means are confined to these avenues alone many decades, if not centuries, must elapse before the masses of the people can be reached. Some more direct and comprehensive system of conveying the truth to the people as a whole is needed.

This is in part supplied by publication. As fast as the results of experimentation are reached they may be disseminated widely by means of the printed page. The value of the bulletins and of the annual reports of the Experiment Station illustrate the good that can be accomplished through such means. These are capable of enlarged usefulness and of being more widely distributed. Publication constitutes one of the comparatively new arms of the service upon which our University relies for the accomplishment of its aims in agricultural education. But it has its limitations. Publication lacks the adaptiveness and vitality which a personal presentation gives. It needs to be supplemented by explanations, discussions and adaptations, not only to individuals but to localities, and to the various phases which the special conditions present.

To supplement this, and the foregoing methods, the farmers' institutes have been established. Through them the latest results of experiments, whether in official stations or upon the farms, whether under the trained manipulations of the professor, or under the likewise trained practical hand of the careful farmer, are conveyed to the masses of the people; are laid open for discussion; for comparison and for questionings. Their establishment just at this stage of development was a stroke of genius. Before the experiment stations began to be prolific in results, the institutes must necessarily have come short of full success for lack of fresh, trust-

worthy material; to have delayed in their coming — now that sufficient new knowledge is being determined each year to give them vitality, would have been a great loss. They are the happy product of good management at a fortunate moment. They constitute an effective means of propagating the latest, freshest and best results of scientific and practical experience. But with all this, you are more familiar than I.

Still another line of effort has recently been inaugurated, intended to supply means for the local adaptation of general facts and laws. The results of experience in one locality cannot always safely be assumed to hold good in other localities under different conditions of soil, exposure, climate and so forth. In comparing results obtained in different localities, the local conditions are essential factors. Among these differences are those of soil, of slope, of drainage, etc.

At my request, the Director of the United States Geological Survey has recently begun the construction of a series of maps on a large scale, which are intended to furnish a basis for the mapping of soils, and the determination of questions of drainage, etc. The maps will exhibit by contour lines each difference of elevation of twenty feet, the whole being referred to the ocean level. These will exhibit the possibilities of drainage in many districts, in which that subject is one of prime importance. Attention has barely begun to be directed to the important subject of underdrainage. In the near future it is certain to be a leading question in all the eastern and northern portions of our state where undrained low lands abound. The system of mapping which has been inaugurated, and which, it is hoped, may be carried out and completed, is far in advance of anything previously attempted in completeness and in accuracy, and it is believed will be correspondingly more valuable.

These are the several lines of effort of the University looking toward the development of agricultural science and its diffusion among the people of the state. Summarized they consist of: first, a short inexpensive practical course (the short course), intended to give in the least time, and at the least

expense, the greatest practical amount of useful knowledge; second, a more prolonged, more liberal and thoroughly scientific course, (the long course), intended for the development of agricultural scientists, who may give themselves to the discovery of fresh knowledge, to its testing, and to its presentation and propagation; third, an enlarged system of experimentation, for the purpose of discovering new truth and testing the old (the Experiment Station); fourth, a system of publication, by which the results of original investigation may be given forth to the people as promptly as possible, and in a permanent form, which may be kept ever at hand for consultation as occasion may require (Annual Reports and Bulletins); fifth, a system of popular institutes, by which the latest and freshest knowledge may be both gathered in and spread abroad; and in which discussion and inquiry and comparison of results may bring forth out of the conflict of thought the best of truth, and through which there may be stimulated a greater intellectual activity and a greater enthusiasm and interest in their work on the part of farmers (Farmers' Institutes); sixth, a system of mapping of soils, slopes, drainage and other conditions, whereby local peculiarities may be exhibited, and the means of comparison and of local adaptation may be afforded (Topographical and Agricultural Survey.)

None of these factors of the system are complete or perfect in their kind, nor can any of them be expected to produce their full fruitage in any moderate measure of time. Years must pass before their full fruits can be gathered, and a patient awaiting and a steadfast support will be needed, but these efforts, with all their defects, and with all our sanguine hopes of an ultimately satisfactory issue, are submitted for your kind consideration.

The Chairman — We have just received a telegram from President Sanger:

T. L. NEWTON, *Secretary State Agricultural Society:*

Express to convention my regrets at not being able to be with them and accept my best wishes for the success of the same.

C. M. SANGER.

The Chairman — To those of us that appreciate what our mothers have done for us, and the moral and intellectual influence of woman, it is a great pleasure at any time to listen to a thoughtful, intellectual and unassuming woman. Notwithstanding her earnest protest at first, Mrs. Little has finally consented to read a paper this evening on the higher duties of a wife and mother. I have the pleasure of presenting Mrs. Little.

THE HIGHER DUTIES OF THE WIFE AND MOTHER.

BY MRS. S. C. LITTLE, SUPT. OF STATE SCHOOL FOR THE BLIND,
JANESVILLE, WIS.

The family is the central organization of society. Nothing compares with it in importance. Nothing else has so potent an influence for good or evil upon the character and welfare of a commonwealth. The condition of the homes marks the degree and kind of civilization of any people. Whether the homes are in stately mansions or in humble cottages, in cities or on the broad prairies, whether isolated in clearings, in forests, or nestled in villages on hillsides, they hold within them the basis of present prosperity, or the reverse, and the hopes or the perils of the future.

The value and power of family life does not depend upon external surroundings. "Home is not merely four square walls." It is not only a place in which one may eat and sleep in the intervals of business. To be a true home, it must contain some one to take care, and some one to be cared for, somebody to love and to be loved by. Some human love, conjugal, filial, or fraternal, some community of interest and motive is inseparable from the idea of home.

"This hearth's our own,
Our hearts are one,
And peace is ours forever."

The complete, ideal home contains a husband, a wife and their children. Upon each member of the family rests a share of the responsibility of making their dwelling place a

true home. Each has duties which may not be neglected without marring its perfection. Too often the husband and father considers that his duty toward this home is done when he has furnished the money to establish and maintain it. As his just reward he expects to find his comfort and pleasure the first care when he returns from his daily work. He is partly right, but let him not forget that the first lesson in marriage is like that of the gospel: "He that is greater among you, let him become as the younger; and he that is chief, as he that doth serve." In a true marriage the thought of another precedes the thought of self. It has been truly said, "Loving hearts make beautiful homes, for the reason that loving hearts are full of the spirit of forbearance and of thoughtful consideration for the welfare and comfort of others. How often all the sweet possibilities of the home are left undeveloped, or lost, for the lack of the gentle consideration, one for another which we call courtesy."

The husband has a right to expect from his wife warm and cordial sympathy in whatever interests him. There should be, on the part of both, hearty co-operation, mutual confidence, common plans, hopes and purposes. There are mutual duties and each has lessons to learn from the other. The daily life of one brings him into contact with important affairs. He lives in the center of a wide horizon. The hands of the other are occupied with "the trivial round, the common task." He needs to share her burdens and to appreciate the influence which the smaller affairs of life have upon the larger ones. She needs to lift her eyes and take in his broader horizon. "Whatever good things he learns, whatever large interests he pursues in his world of business, or politics, or thought, his wife should be able to share with him," and she will do this to the pleasure and profit of both. Especially should she help and encourage all his best efforts and highest aspirations. Many a great man has been given to the world because some wise woman—wife, mother or teacher—saw the beginnings of true manhood, and nourished them until the character solidified into beauty and symmetry.

Childless homes may be truly happy, but that home is most blessed in which

“New little feet patter on the floor,
New little faces peep through the door.
New little souls have entered into life,
New little voices speak in love or strife,
New little fingers tightly clasp our own,
New little tendrils round our hearts have grown.”

To the parents, these human lives, with their limitless possibilities, are entrusted by their Creator during the long period required for the development of their powers into manhood and womanhood. Only parents — and often only mothers — know how much must be done and borne for them. The young mother first appreciates her own mother when she begins to experience the care even one child requires. And as the family increases the cares do not lessen; nor do they lessen as the children grow into youthful lads and maidens. But such labors bring daily their own rich and full reward. An old lady, a grandmother, spoke from her own experience when she said to my year-old baby: “Happy creature! *you* never go to bed in debt!”

Within each little child dwells a life that shall develop through endless years, and upon the parents chiefly the character of this life depends. When thoughtful parents realize this, will not the prayer of their hearts, if not of their lips, be: “How shall we order the child, and what shall we do unto him?”

Nothing can be done worthily without a clear apprehension of the aim of the work. No wise man begins to build a house without a plan. No wise woman cuts into costly material without a pattern. What shall be set before us as our ideal for our children? Shall we aim to make them fashionable, or rich, successful in business, or able to shine in society? Shall we devote years to accumulating property to bequeath to them? Shall we direct all our thoughts to the brief years of earthly life, or shall we remember that they are immortal, and that their sojourn here is but the beginning of an endless life, for which this life is the school? When they are best fitted for the life that is to come, they

are best fitted for the life that now is; and when they are prepared to do their duty by their fellow men, they are prepared for service in the kingdom of heaven. It is in the common duties of life that our best traits and powers are developed.

The world has use for our children. Let us aim to make them the workers the world needs. It needs strong, healthy men and women, whose bodies shall be their faithful, efficient servants through a long life, and who may give to the race in their turn healthy and sound offspring. The world needs men and women of broad and liberal education, with sound minds, alert, thoughtful, well-informed, well-balanced, with clear-cut ideas, able to judge wisely, to reason correctly, and to execute nobly. The world needs men and women of character — self-controlled, strong, pure, noble, unselfish, honest and truthful, patient and tender, diligent and faithful. Only One has ever fully attained to such a character, but that one perfect life is ever before us as an ideal towards which to strive with earnest purpose.

The child is a responsible being, and must learn to make right choices. He must be trained to self-government, but until his reason and judgment are developed and self-control is acquired, his choices must be directed. He must learn to obey someone else, before he can obey his own reason, rather than his inclinations. Hence, it becomes of prime importance in relation to his entire life, that he should early form the habit of cheerful obedience to any rightful authority. The child who habitually disobeys his parents is in a fair way to disregard all human and divine laws in his mature years. He is prepared to yield easily to the sophistries by which men are led to look for happiness in lawlessness, while they call it liberty. From disobedient children come the future anarchists. The obedient child is a happy child, and in the tranquility he enjoys, his body, mind and heart find their best chance for healthy growth. "Ought," "must," "duty" are good and wholesome words, and children cannot too soon learn by heart their practical significance. Obligation — which is duty — is a sacred thing, and the child who is taught to respect and obey its claims, grows into the law-abiding citizen whose honor and fidelity can

be trusted, while the child who ignores them develops into a selfish, lawless, and dishonorable man, or a selfish, impatient and frivolous woman.

The child's own will-power should be so educated that he will freely choose to obey. Unfulfilled threats, or hasty or spasmodic compulsion, will never accomplish this result, and may do permanent harm by stirring up a spirit of antagonism between parent and child, or by the loss of love and respect occasioned by it. Patient, wise, loving, constant training, by counsel, by reproof, by command and by commendation, in little things, as well as in greater ones, is what the child needs. Let the training be directed towards teaching him to use his own power of choice aright. Only what is reasonable should be required of him, and, as his powers develop, he may be led to see the reasons underlying his parents' authority. He should learn to restrain himself from unrighteous and unlawful conduct, and also to compel himself to do what he ought to do, at the right time, and in the right way. By the time the period of childhood is past, these habits of self-control should be established, and then authority may properly give way to wise and sympathetic counsel.

There should always be perfect confidence between parents and children, but as childhood emerges into youth, it is especially needed. No other security against foolish or vicious companions is as sure. This alliance should be strengthened in every way. Let a share of each evening, or one or two entire evenings each week be definitely devoted to cementing family ties. Be young with the little ones, and keep pace with them as they advance in years and knowledge. Thus it will be easy to guide their amusements, their reading and their companionships. Time spent in the family circle, in reading, or song, in quiet games, or in genuine frolics, is valuable to parents and children alike. There is no way of keeping the heart young as the head grows white like maintaining active sympathy with the exuberant spirits of young people, participating in their sports and fun, not as an irksome task, but because of genuine interest in what interests them. And for the children,—if home is

the brightest and cheeriest place in the world, and Mother and Father the best playmates and comrades, from how many temptations are they saved! But if

“ All work and no play,
Makes Jack a dull boy;
Yet all play and no work,
Makes Jack a dull shirk.”

Children should share according to their age and ability in the family work. Regular duties, suited to the capacity of each, should be assigned, and their faithful performance required. This is much more easily secured in the country than in towns, and in families of moderate means, than where wealth is abundant, but it is well worth painstaking effort in any family. It is not necessary that the assigned work should always be selected with reference to the pleasure it may afford. Children should learn to do distasteful and disagreeable things, because they are necessary and some one must do them. There is a vast amount of drudgery in life, and even young children may understand that its faithful and cheerful performance is a blessing. The grace of “patient continuance in well-doing” is sometimes a neglected grace, but it is worth cultivating. There is a short tract published in Chicago with the suggestive title: “Blessed be Drudgery,” that is well worth reading.

“How shall we order the child, and what shall we do unto him” that he may know his Father in heaven, and come by his own free choice into loving, obedient relations to Him? Let the spirit of Christianity pervade the entire family life. True religion is not a mere external—a veneer—put on to make a goodly showing; but a vital principle, ruling the daily life, permeating every action, directing every purpose. Christ called his disciples the “lights of the world,” and bade them shine. A light shines only as it is luminous; and a Christian is luminous only as filled with the spirit of the Master. When the lives of the parents glow with this light, the children may be expected to catch the radiance. Young people are most easily led by example. The child looks and listens, and what seems to be of chief interest to his parents he also is likely to consider of first importance. When he

sees his parents,—or even his father only,—completely engrossed in money-making, or household care, or some form of pleasure-seeking, is it any wonder if he comes to believe that where his parents' hearts evidently are, there the chief treasure is? But when the word of God is plainly the guide of their parents' lives, and His blessing upon each day is reverently invoked in its opening hours, when the Lord's day is the honored day of rest, when the parents love God and work righteousness, it is a strange exception if the children also do not find their chief joy in loyal and loving service of the God of their fathers and mothers.

Shall household duties absorb all the time and strength of a wife and mother? Sometimes this may be necessary for a season; but whenever possible she should secure the rest and enjoyment that is obtained from change of thought and scene. She owes it to herself and to her family to keep her mind bright and fresh. Whether her education in the schools has been little or more, her mental activity should not cease when adult life is reached. The ability to acquire new ideas and learn new ways is lost by many women solely from disuse. It is difficult to renew the habit of mental activity when once lost, but it can be kept vigorous by use, as many women have proven in their own experience. Resist the tendency to allow the days to grow fuller of toil until every moment is crowded with housework, or sewing, or society calls, and there is no time left for mental stimulus, or spiritual refreshment. If the heart is set upon it, and the need is understood, a woman's wit will find a way to secure it. Some one says, "You have all the time there is. Your mental and moral status is determined by the use you make of it." Do you remember Mrs. Garfield's experience as narrated in a published letter to her husband ten years before he became president? She says: "I am glad to tell that out of all the toil and disappointment of the summer just ended, I have risen up to a victory; that silence of thought since you have been away has won for my spirit a triumph. I read something like this the other day: 'There is no healthy thought without labor, and thought makes labor happy.' Perhaps this is the way I have been able to climb

up higher. It came to me when I was making bread. I said to myself, 'Here I am compelled by inevitable necessity to make our own bread this summer. Why not consider it a pleasant occupation and make it so, trying to see what perfect bread I can make?' The very sunshine seemed flowing down my spirit into the white loaves, and now I believe my table is furnished with better bread than ever before; and this truth, old as creation, seems just now to have become fully mine,— that I need not be the shrinking slave of toil, but its regal master, making whatever I do yield me its best fruits."

The homeliest details of every day life may be the medium of richest blessings and in them may be wrought out truly divine service. Quaint George Herbert says:

"A man that looks on glass,
On it may stay his eye;
Or, if he pleaseth, through it pass,
And there the heaven espy.

All may of Thee partake;
Nothing can be so mean,
Which with this tincture, *for Thy sake*,
Will not grow bright and clean.

A servant with this clause
Makes drudgery divine,
Who sweeps a room as for Thy laws,
Makes that and the action fine.

This is the famous stone
That turneth all to gold;
For that which God doth touch and own,
Cannot for less be told."

"Duties never conflict." When they seem to do so, it is certain that the vision is not clear. Instead of worrying and fretting because all cannot be done, a wise course is to examine carefully, and determine which apparent duty is the real one, and which owns another name. It is worry that wears out and kills more women than work. In many lives there is a constant struggle to do more than can be done. Our civilization is complex and full of demands, among which we must choose. Let us simplify our style of

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living, and so secure time and strength and inclination for higher duties. It was John Newton who said that "Man's duties,"— and woman's, too — "are like a fagot, one stick of which God designs for each day's burden. The weight of a single billet may easily be borne by the help of God's grace. The trouble is that men will persist in adding to-morrow's and yesterday's and next week's sticks to to-day's, so that it is no marvel when they sink beneath the accumulation."

" Make a little fence of trust
 Around to-day;
 Fill the space with loving work,
 And therein stay.
 Look not through the sheltering bars
 Upon to-morrow.
 God will help thee bear what comes
 Of joy or sorrow."

DISCUSSION.

Mr. Hitt — I move that we give a vote of thanks to Mrs. Little for her able paper.

The motion was carried unanimously.

Mr. B. S. Hoxie — It seems to me that that is rather a small meed of praise, after listening to such a paper as that, to simply assent to it.

While listening to that paper the thought came to me, "How few of these gray heads in this room, while in their younger days have listened to a paper like this, an incentive to a higher and purer life in the house,— much more the word of advice coming from a lady?" I remember when it was announced the first time that a lady was going to speak in our place, when I was young, why, she was a wonder! A woman to stand up before an audience and talk, to deliver a lecture or preach a sermon? And we all went out of curiosity. But that time has passed.

I thought, too, how many homes in the state of Wisconsin will be made better and brighter and purer from the reading of that paper by those who cannot be here to-night

to listen to it. As I have been round in the state the past winter and have heard papers at our meetings containing sentiments something similar to the one we have just heard, I have often times said, "there is one, two, three, five, ten in this audience that will go home, and their homes will be made purer and better, and they will know better how to train their children, and to appreciate life and its blessings from listening to such a paper as this we have listened to to-night."

Another thought is this idea of drudgery. In thinking that over, I don't know that I have ever done any labor in my life,—and I have always labored with my hands,—that I thought was real drudgery, because I have always put hope and trust into the effort that I have made. Everything in the line of work may be made drudgery if you choose to make it so. And, on the other hand, almost every labor can be made happy by love and trust, if we look at it in the proper way.

Mr. Babbitt—Mr. President: I heard a gentleman in the room remark that that paper was about ten thousand years ahead of time. I believe that he made a terrible mistake. Brother Broughton is usually up to the mark in almost everything, but I believe the time has come when the farmers of the state of Wisconsin are prepared to receive a paper of that kind, and can also feel that they have caught the spirit and the inspiration that it breathes, and that the homes of this state are already in sympathy with that paper and with its author.

I think that a wonderful change has come o'er the spirit of our dreams in the last few years. I think that the education that the farmers are receiving from every direction from their own talk and intercourse is making a wonderful impression upon us as a people. It inspires us, it kindles the eyes of our boys, it warms the hearts of our girls, and it makes each home a paradise. And if there is anything in the world that makes me rejoice that I am a farmer, it is that the wife, the boy, and the girl love home. They have a reason to do so, because it is a place of peace, a place of rest, and a place of comfort to them all. I haven't a very

elegant home, but it is a wonderful pleasure to me to know, gentlemen, that five of the prettiest rooms I have got in the house were once common woodsheds! Every woodshed has been changed, and the last change we made was to make the old kitchen a parlor. (Applause.)

God bless the inspiration that the farmers of the state have given to their farmer brothers and friends. (Great applause.)

Mr. Broughton — Brother Babbitt has made a mistake, the paper would have been applicable to the garden of Eden before the fall (laughter), or, in the other case, in these days of tribulation, it will enkindle hope and inspiration for the millennium that is to come.

Mr. Hoxie — Brother Babbitt is living in the inspiration now, he says.

Adjourned.

9:30 A. M. FEBRUARY 8, 1888.

Mr. Arnold in the chair.

Mr. John M. True — Before entering on the programme, Mr. Chairman, I wish to move the appointment of a committee on resolutions, to whom all resolutions introduced in this body shall be referred. I ask, inasmuch as I shall not be in attendance during the convention, that my name be not placed on that committee.

Mr. Broughton — That may be a scheme to bury some ideas in the committee. I hope due prudence will be used in selecting the committee.

Mr. True — I am very glad that I asked not to be appointed on the committee, after the suspicion that raised in the mind of Brother Broughton. (Laughter).

Mr. Allen — I second the motion.

The motion was carried.

The Chairman — I will appoint as such committee, Mr. Fratt.

Mr. N. D. Fratt — I shall not be here longer than to morrow, and I wish to be excused from the committee. I suggest the name of Mr. Adams as chairman of the committee.

The Chairman—I will appoint Mr. Adams, Mr. Fratt and Mr. Carr, as such committee.

The first paper on the programme is on "The Short-Horn as it Was and Is," by William Warfield, of Lexington, Ky. Many of us were very glad to see this name on the programme, and anticipated a great pleasure in seeing Mr. Warfield, he being an old breeder and an eminent one, and many of us having read his writings in the *Gazette*, and other papers. I am sorry to say that Mr. Warfield is not able to be here, but Mr. Hamlin will read his paper. Here is a letter from Mr. Warfield:

LEXINGTON, Ky., January 31st, 1888.

T. L. NEWTON, Esq., *Secretary Wisconsin State Ag. Society:*

DEAR SIR—I enclose the paper promised for your convention, and greatly regret that my health forbids my going with it. It would be a very genuine pleasure to be present during your deliberations and renew old friendships and meet those of your number whom I have never had the pleasure of knowing hitherto. In lieu of that, it is a compensation in some degree to be able to respond in this way, at least to the cordial invitation extended me.

With my best wishes for a successful session,

Yours Very Sincerely,

WILLIAM WARFIELD.

THE SHORT-HORN AS IT WAS AND IS.

BY WILLIAM WARFIELD, GRASMERE, NEAR LEXINGTON, KENTUCKY.

It is now about a hundred years since the "improved" Shorthorned cattle entered upon that unprecedented career which has made them the most famous and the most sought after of any breed the world has yet known. In the decade from 1780 to 1790 the movement was taking form which, ever gathering in its progress, volume and momentum, has placed the cattle once to be found only here and there in a single county, or at best in a narrow corner of England, at the head of the desirable breeds not merely in England, nor yet in her many and widespread colonies, but also throughout this great country, with an ever growing ascendancy over the broad pampas of South America; until the breed

has attained, in short, a growth and an expansion (as is plainly witnessed by the records annually made in the various herdbooks) compared to which the other breeds must be regarded as yet in their infancy. There must have been some marvelous potency in the blood of the cattle of County Durham, latent till then, which coming to the surface under the wise manipulation of the old breeders sent such a wave of conquest over the world. Let us see if we can trace the springs of this movement to their sources.

It seems to me that there was a two-fold power, or perhaps it would be more correctly described as three-fold. The cattle in the first place must have had peculiar excellence and great power of stamping their excellence on their produce; and second, they came into the hands of men, intelligent, active, farseeing, who developed the good qualities and eliminated the bad, who treated them with discretion, and bred them with wisdom; and, I might well add, these two fortunate circumstances found their conjunction at a time when there was a great revival in all agricultural affairs and when there was a special demand for improved breeds of all kinds of stock.

At the time to which I have alluded the able and enthusiastic Bakewell, the great pathfinder among improvers, was enjoying in a green old age the fruits of his labors. Among cattle he had directed his attention to the Longhorns and had brought them into the highest repute and made them the favorites of fashion. But even Bakewell had failed to win from an unkind soil a liberal harvest. The Longhorn with its large and loosely knit frame and deficient milking qualities responded indifferently to his many efforts, and his magic, though he charmed never so wisely, failed to make of them a truly valuable breed. His methods, however, won followers everywhere and when such men as Robert and Charles Colling began to turn their attention to stock breeding they naturally embraced the Bakewell methods, at least in the main. It was not the adopting of his methods, which were then the rage all over England, but the applying them to the Shorthorned Durham instead of the Leicestershire Longhorns or any other breed, which

made this an epoch-making event. In human affairs a single cause rarely operates to produce alone and unaided a great result. It was thus the usual combination of several interarcting causes which began the revolution in the neat cattle business of the world.

All the evidence points incontrovertibly to the fact that the Durham cattle were already of great excellence both as beef and milch cattle. As beef cattle they doubtless already possessed that superior quality which was one of the great lacks of the Longhorn, and were smooth and shapely but inclined to be small in some instances, as is illustrated by the famous cow carved on Durham Cathedral, while others were large and less even. As milkers they already possessed the two qualities so rarely combined — a combination which keeps them in an honorable place in the class of milk cattle despite the too common neglect of their breeders — the two qualities, I say, of producing milk of very high quality and of producing it in much more than the average quantity. As in all unimproved stock there was, however, great unevenness, and the want of system and of any proper standard among the breeders had hitherto stifled all aspirations towards progress.

Such was the material the early breeders had to work on. By a little careful selection and a few judicious crosses they astonished all England and won the interested attention of the whole civilized world. Surely these men built wisely on the good foundation they found ready to their hands. Year by year the fabric grew, decade after decade column was added to column and spandril to spandril, till like the rising of some great master-piece of architecture, the work modified and varied with a thousand developments, but without a single discord, passed to its completion seemingly destined ever to a future greatness which was only an orderly progression from the germ type in the minds of the first master-builders.

But to-day after a hundred years for more than half of which the breed has held the place of the most favored, there is a cry gone out in the land that the labor of these long years is but dust and ashes in our mouths and the de-

licious fruits we had looked to gather are but apples of Sodom now that they are gathered in; that a charge was committed to our keeping and we have proved faithless to it; that the noble cattle which passed into our hands crowned with the approval of the best judges everywhere have been suffered to deteriorate till only the pruning knife swiftly and herocially applied can possibly save them from the fate which befell Bakewell's Longhorns, — from passing away into a barren memory.

Let me pause here to say what I have said often and in many places and yet am never tired of saying, of iterating and reiterating. And that is that after many years of handling cattle that I do not believe that there is to-day any breed so admirable as the Shorthorn. The qualities which were latent in the breed when the Collings, the Whitakers, and the Wetherells took hold of it a hundred years ago and brought them into vigorous life are now patent in them, seen and read of all men. I have seen them mistreated and mismanaged in many ways, but I believe to-day that the Shorthorn is the *equal* as a beef breed of the combined phalanxes of all the exclusively beef breeds which attempt to *rival* it on this side; and as a milk breed for milk, butter and cheese, that it is a dangerous rival of any and all of the highly specialized milk and butter breeds, and taken in large numbers probably quite the equal of any of them; while as a general purpose cow, as the farmers cow *par excellence* it is so superior to all other breeds that it knows no rivalry. Such is the Shorthorn to-day in my judgment. And I am prone to think that any of us may well make it his boast that he is the breeder of so excellent a race of cattle.

And there is another quality which these cattle still possess, most admirable and most worthy to be remembered, a quality which I was glad to see that Mr. Amos Cruikshank, whom, though I have never seen face to face, I think I may justly call my friend, in a recent article strongly insisted on as one of the Shorthorn's most desirable and admirable qualities, namely. the ability of the bulls to stamp their get with their image. Prepotency in man and in beast has al-

ways been justly reckoned as one of the highest indicia of superiority. And as Mr. Cruikshank says, I have never seen any breed of cattle so capable of transmitting their superior qualities in natural descent in their own breed, in crosses with other breeds, and in crosses with native stock. The cattle are not less good, nay, are far better, no doubt, point by point, among the most choice ones, and also upon a general average, than were the cattle in County Durham before the work of Hubback and Favorite and Pilot had been done there. If there are evidences of deterioration from the standard of a few years back, it behooves us to look to it that we imitate the example of our predecessors of the heroic age of Shorthorn breeding. No one can read "the book of the beginnings" in this sphere without being struck with the fact that the early breeders, whose names and deeds have been handed down in the records of Fame, were all excellent judges and persistent in seeking and tenacious in retaining animals which represented to their minds the type towards which they were struggling. This is one of the most essential qualities of the successful breeder, and yet I sometimes think it is to-day one of the least esteemed and most neglected. A great many men act and talk as if a man could become a good judge simply by thinking that he is such and by buying a few head of cattle and breeding them a few months. On the contrary, I believe that the first-class judge is growing more and more rare, while I am strong in the belief that if we are to make the Shorthorn renew its youth and begin another upward movement, the place to begin to emulate the old improvers is in their quality as judges.

The cattle in that part of England were all of equal reputation in that day and when the work of building up began there were many men who were drawn along after the leaders as leaves follow in the track of a passing train, but how few of them are remembered. Some used and profited by the work the leaders did, and their stock has lived on; many others did not gain even so small a posthumous renown. It was the few vigorous, instructed, clear-sighted men who took

the helm and steered into the desired haven, and they did it by the sheer force of their judgment and their capacity.

If, then, the Shorthorn world believes that the breed, whose fortune is embarked with theirs in a single bottom, is in danger of loosing position and prestige can they do better than make a precedent of the example of the men of old time? And what does that mean? It means a return to their methods. It means an abandonment of artificial methods; a neglect of little and fictitious distinctions; for the observance of the important and really necessary things of breeding. Can we imagine Colling rejecting the famous Hubback, because he was a yellow-red and white, as many a breeder would do to-day? or turning away from Favorite because he was a light roan? Such things as these, and over-nice distinctions of pedigree, etc., *ad infinitum* are the walls which stand between Shorthorn breeders and the delectable lands of their dreams, in which they fain would walk but somehow never reach. It is hard to break through tradition unless public sentiment goes with the venturer. The early breeders had public sentiment with them, applauding, encouraging, urging them on; but this not the way to-day. Is it any wonder that they who should show the way are laggards?

If I could hear men say that what they wanted was the best to be had without regard to color; without regard to family, provided only the pedigree were a good, honest one; without regard to anything but the breeding of the best possible stock, I should go up to the hill top and look away for the breaking of that new day when cattle shall all be worthy of the name they bear. Then will breeders bend their attention to the mastering of points of excellence in an animal in the old eager way, then will poor stock fail of sale and go to the shambles, then will each generation begin to be better than its predecessor, then will trade revive and the grumbler's occupation be gone. Am I painting a picture of the millenium? I hope not. For it is by such a road alone, as far as I can see, that we are to gain the point, we climb for, and as wide awake American farmers I think we mean to reach the goal of our desires.

How shall a message from conservative Kentucky — the first born daughter of the new West — venture to show the way to her eager wide-awake sister of the north-west? It is my part rather to recall the manly work done so long ago, and to trust to you to bring again the good things of that era.

TROTTING HORSE BREEDING.

BY A. C. PARKINSON, COLUMBUS, WIS.

Some one has said that when old Grey Messenger, with two ponderous colored grooms swinging to his jowls, came plunging down the gang-plank from the ship that brought him over, the horse industry of America was enriched thereby to an amount quite beyond the possibility of calculation.

It is hardly too much to say that from the loins of this remarkable horse has sprung the tribe of American trotters, peerless in beauty, endurance, courage, utility and intelligence. However, aside from his peculiar prepotency, there was about this renowned horse few excellencies that were not possessed in equal or greater degree by a score of others imported about the same time. In conformation and finish, he fell far short of the ideal, for he is described as being upright in the shoulders, low in the withers, with a short, straight neck and large bony head; but in other respects he was almost faultless and was possessed of extraordinary spirit.

In a recent article from the pen of an aspiring writer on the trotting horse, I find this statement: "As a horse imported, Messenger's superior never lived. There is not a knee hock" (whatever that may mean) "or a cannon-bone on this continent but has Messenger for its ancestor. There was not, nor is there now a family or breed, but he could improve. To move from him was but to descend."

The first part of this statement is a confusion of nonsense, misnomer, and exaggeration. The latter part is perniciously untruthful. It is, moreover, a gross libel upon the intelligent labors of the past twenty-five years to establish a true trotting inheritance. There is scarcely a family or strain of

trotting horses in existence to-day that a recurrence to old Messenger, were it possible, would not impoverish and degrade. To many this may seem iconoclastic; especially to those who still persist in that old chestnut that their favorite mare is a daughter of the old horse, oblivious of the fact that he has been dead a hundred years.

Messenger was truly great; not as a running nor trotting sire, but in this, that he begat a class of horses with the trotting instinct in a greater degree than had before been known—an instinct, inclination, disposition or capacity, capable of being nurtured, strengthened and transmitted in his descendants.

By fortuitous, or speaking more accurately perhaps, by intelligent in-breeding at first, this trotting instinct was strengthened and intensified. But this sort of breeding—at times little short of incestuous—could not be carried on indefinitely without impairing the stamina of the offspring. In the course of years, years crowded with many experiments and many failures, it was discovered at last that there was such a thing as *nicking* with the blood of other strains, whereby the current of trotting blood was in nowise impeded, but the general vigor, courage and stamina of the progeny improved. At length it was seen that the blood of Diomed, Bellfounder, Bashaw, Justin Morgan, the Pilots and others mingled kindly with that of Messenger, yielding a progeny vastly superior to the original stock. To illustrate: Old Abdallah, the sire of Rysdyk's Hambletonian, was the result of a union of a son and daughter of Messenger. The trotting instinct or inclination was much stronger in Abdallah than in Messenger, his grandsire. Rysdyk's Hambletonian was a strongly inbred Messenger, but not so closely inbred as his sire, Abdallah. Hambletonian's granddam, Old One Eye, was also the progeny of a son and daughter of Messenger; but Hambletonian received an infusion of Bellfounder blood through the sire of his dam.

The Bellfounders have proved many times since a wonderfully happy "hit" upon Messenger blood. Equal success has attended the union of the blood of several other strains with that of Messenger and Hambletonian. Many

of these other families have amounted to but little in the production of trotters in any other companionship, but invaluable when crossed with the "Old Grey" and his descendants.

The trotting horse is peculiarly an American product. No other country on the globe can approach us in this particular line of husbandry. Many reasons have been assigned to account for this peculiar bent of American breeders. Our people are nothing if not practical. The trotting roadster horse, in spite of an occasional opinion to the contrary, is essentially adapted to a versatility of uses; is essentially practical. Is there any horse that is capable of so great a variety of employments? But here in America is the field of the reins-man. There can be no question, I think, but our splendid stretches of dirt roads, everywhere of easy access, a condition of things likely to remain unchanged for years, if not for centuries, have added unmeasurably to the popularity of the driving horse. The ease and gentility of carriage riding have created an almost universal demand for the light harness horse, and the intelligent breeders of the country are largely engaged in supplying that demand.

We have not as yet what may properly be called a distinct breed of trotting or roadster horses. Fifty years ago the idea of establishing such a breed was hardly dreamed of. To-day it is regarded one of the possibilities of the near future. For myself, I have no doubt that within the life-time of many here present a distinct breed of the trotter will be produced, possessing the peculiar traits of high and uniform speed.

Surveying the past, are we not justified in this conviction? It is only within the past twenty-five years that a systematic effort toward the establishment of such a breed was begun. The manner in which this work was inaugurated, the methods with which it has been pursued, leading up to the present time, are admirably presented by that charming writer, Mr. J. H. Sanders, in his excellent work on "Horse Breeding." His presentation of the facts touching this subject has the merit of clearness and historical accuracy. He says: "At first, animals that excelled the average

of the species as *trotters* were selected to breed from, with a view to perpetuating and intensifying this quality; but as its possession was at that time an accident—a spontaneous variation—it was found that but a few of the immediate descendants of the animals first chosen with a view to breeding fast trotters could trot faster than their remote ancestors. But when such of them as did show improvement in this direction were again selected for breeding purposes and coupled together, it was found that, while there were still many failures, the proportion of the descendants that showed improvement in the trotting gait beyond the average of their ancestors was materially increased. And so by selecting from generation to generation from such families as have shown a tendency to improvement in this quality, we made considerable progress toward founding a breed of trotting horses.”

This is a concise history of the methods that have been employed and are still being pursued in the efforts of intelligent and patient breeders.

The aim has been to establish a true trotting heredity through selection and cultivation, in every step in the process seeking to intensify the *inclination* or *instinct to trot*.

You remember that old Arab tradition; the prophet desired to select certain mares from among a number of his chargers for breeding purposes. He caused several of them to be kept without water for two days. At the end of that time, when mad with thirst, they were set at liberty and at the moment when they were near the coveted water, his trumpeters sounded a war charge, which had such an effect upon five of them that they abandoned the water and galloped to the spot where the war trump sounded, ready and eager for the onslaught. In the case of these Arab mares love of the charge, acquired by constant use from generation to generation, had at length become a transmissible quality. Then did the prophet so long ago have hold of the idea with which our trotting horse breeders are just now so busily wrestling? It would seem so. And in the legend, too, we discover an early familiarity with that other theory now attracting so much attention. We refer to the theory



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of breeding the trotter from *developed speed*. The idea is this: that of two sires, equally well bred in trotting lines, the one which has had his speed developed and the same with his immediate ancestors, will more surely transmit the trotting quality than the other whose speed and that of his progenitors is undeveloped.

The latest theory of breeding the trotter from ancestors of developed speed is now an absorbing thought with intelligent, progressive horsemen. Too few data have been obtained by practical experiment to establish with certainty the superior results of this principle of breeding. Important tests of this theory have been begun at several of our great establishments, notably the Fashion Stud Farm of Trenton, New Jersey. Here in companionship with those celebrated horses Jay Gould, record 2:20½; Gen. Knox, 2:24, were placed those equally celebrated matrons, Goldsmith Maid, 2:14; Lady Thorn, 2:18½; Lucy, 2:18½; Lady Maud, 2:18½; Rosalind, 2:23¾, and others. With such great performers, rich in trotting inheritance as well, it was thought the world would witness a practical test of the value of the theory of breeding the trotter from developed speed. Little has come of the experiment, however, since the managers of the Fashion Farm are averse to developing the speed of their youngsters, and definite results in this particular instance can only be had when the progeny have reached mature years. Animals of extraordinary speed, like these, are so high priced, that future experiments on such a scale and in such numbers as will afford satisfactory data will be meager, though the *tendency* of all intelligent breeding will be continued close to the line of this theory. For myself I have no doubt but the future will prove the correctness of this principle.

The relation sustained by the thoroughbred to the trotter suggests a controverted point, about which some intelligent people honestly differ. It is but fair to say that there are, at least, a few breeders who insist that the way to breed the trotter is to go to the runner. Their reasoning is this: All of our great families of trotters trace back to the English thoroughbred; therefore to improve our race of trotters

we should constantly recur to the fountain head; this must be done, we are told, especially if we would obtain the *limit* of speed and endurance in our trotters. If speed at the trot is meant, we answer that there is nothing in the history of our great trotting performers to sustain the proposition, for none of them were thoroughbred; and furthermore, no thoroughbred has ever yet shown great speed at the trot. Nor is the runner a horse of greater endurance even at the running gait than our choicest bred trotters at the trot. The fifth, sixth, and even seventh heat performances of many of our great trotters, maintaining to the very end of a race of broken heats, the extremest speed, prove beyond a peradventure that in point of endurance our American trotter has no superior.

The advocates of running blood in the trotter find comfort in pointing to some fast trotters that have thoroughbred blood as close as the sire of the dam, like Maud S.; but in all such cases I think it will be found there is a strong concentration of trotting blood in the pedigree, which neutralizes and overcomes the running instinct. This is notably true in the case of Maud S.

The same Bourbonic notion prevailed at one time in respect to introducing the Arabian blood into that of the English runner. This was a resort to the original fountain head; but the disciples of this theory paid dearly for the experiment. The Arabian cross upon our thoroughbred proved a dismal and costly failure. The laws of heredity are the same in this case as in the other. All scientific breeding is progressive.

I believe the Pointer dog has descended from the Spaniel, having later on been crossed upon the Fox Hound to obtain greater speed and more nose. After a hundred years of judicious breeding and cultivation toward a certain ideal, the heavy, slow and awkward appearance of the Spaniel is lost, and instead we have the quick, fleet-running, smooth-haired Pointer, invaluable for field work. The pure bred Spaniel still works close about the gunner, tiads and flushes his game. The Pointer works at great range, finds and points his birds. Would any intelligent sportsman contend

that the Pointer of to-day can be improved by a recurrence to the fountain head, the Spaniel?

Albeit the experiences of the past quarter of a century have fully established the fact that the breeding of the trotter is no longer a mere hap-hazard business. Blood will tell. Here as in every other branch or department of breeding, like begets like. A long line of trotting ancestors, deep in standard blood on both sides, is the surest guarantee of uniform speed.

The achievements of the past quarter of a century point to wonderful possibilities in the future. Lured by these successes, the trotting horse breeders of America may justly view the field of their endeavors as one of the brightest promise.

Few realize what has been accomplished in this special field. At the beginning of the present century there was not one horse on the continent with a mile record as low as three minutes and such a horse did not appear until the year 1818. In 1834 the best record was reduced to 2:31½ by Edwin Forrest. Ten years later the wonderful Lady Suffolk obtained a record of 2:26½ which remained unbroken till the year 1859, when Flora Temple astonished the world by trotting a full mile in 2:19¾. This feat was unsurpassed till 1867, when Dexter came to dethrone the queen by a record of 2:17¼. Now the doubting Peters said this is phenomenal; this *is the end* of all record-breaking. But as the result of greatly improved methods in breeding, begun about the time of the advent of Dexter, there have appeared in the United States, since his day, not less than two hundred horses capable of beating Dexter's time; while the reigning mistress of the turf could shut him out, with the flag retired full twenty rods from the wire.

The average time of all the heats trotted on the Buffalo track in the year 1866, was 2:38½. In 1880, fourteen years later, the average time of all the heats trotted that year over the same course was exactly 2:20; a fact that shows marvelous progress in the production of speed. The number of 2:30 trotters, of which there was not one representative in 1840; but two in 1850, less than a dozen in 1860, will reach

in new entries for the year just closed nearly four hundred; and the whole number of 2:30 performers reaches into the thousands. Again we are apt to be so far carried away by our admiration of the great stars of the turf as to forget or overlook the legion of three minute roadsters of our day. These, too, are the ready sellers at good prices that are constantly replenishing the exchequer of our well-to-do farmers and horse raisers, whose sales are rarely heralded in the public prints and about whose thrift, beyond their immediate neighborhood, the world hears and knows but little. In this class of roadsters, too, you are apt to find charming horses. Their breeders have not sacrificed all else to speed. They have given quite as much attention to size, conformation and style, qualities that breeders for speed solely are apt to ignore, or at best treat as secondary. The family and business roadster forms an important part of the trotting horse industry. No domestic animal begins to stand in so close companionship with its master. Next to those who share with that master the bounties of his table and the joys of his hearth, stands this faithful servant. A more useful class of animals than the trotter cannot be named, and by the trotter we mean the light harness horse of every description. He is peculiarly and essentially the horse of the people, and constantly stands in closer relation to all classes of people than any other of the equine tribe. That great numbers of these horses are bred primarily for racing purposes does not affect this proposition. Trials of speed and the incentive to higher breeding which such trials unquestionably induce, redound immeasurably to the benefit of this great branch of live stock culture.

I am unalterably opposed to gambling in all its multifarious forms. Who is not? But I do protest against much of the cant and hypocrisy of those Pharisaic souls who are evermore singing their Jeremiads over the immoralities of the trotting race. I admonish the intelligent farmers of Wisconsin to interpose their earnest protest against that spirit in the community that would proscribe this innocent and beneficial amusement, an amusement among whose devotees have been found many of the noblest, wisest and best

of all ages. Why is it sought to anathematize these exhibitions of speed? Because some persons, forsooth, will place wages upon the result. As well say: taboo our presidential elections, because people will bet upon the outcome. There is no sense in forcing decent people to abandon an honorable and useful amusement, because it affords the unworthy an opportunity to ply their questionable games. The great John Wesley introduced lively music into his church services, holding that Christian people should not surrender the pleasure of it entirely to the ungodly. Nowadays the enrapturing piano and the incomparable violin enliven the church and the brothel. Decent people, who down in their hearts enjoy these speed contests, can best serve their own interests and those of the state in which they live by frowning down this maudlin sentiment of proscription. Let them rather lend their influence to correct any abuses that may creep into the management of such contests. Former abuses have been frowned down by an improved public sentiment, till now, I venture to say our trotting exhibitions are as free from dishonesty and fraud as the general run of other legitimate vocations or amusements. If some abuses still abide, lop them off. There is no reason why the popular race course may not be made entirely harmless—a fit resort alike for all classes. These exhibitions are the most effective agency in the promotion of this great and important industry. To my mind a properly conducted trotting match is as legitimate and as useful, to say the least, as the show ring where the Clydesdales, the Percherons, the Short-Horns and other animals contend for prizes, and it is conducted as honorably and the award determined with quite as much fairness and ability in the one case as in the other.

In Wisconsin the trotting horse industry is an important one and each year becoming vastly more so. Millions of dollars are invested in it, and thousands of our people find employment through it. Mr. Case of Racine, known by all, a Wisconsin pioneer, who has contributed abundantly to the up-building of the material interests of the state, has alone invested well nigh a half million dollars in his great breeding concern. At his barns may be seen Phallas, the fastest

living stallion; Jay Eye See, the fastest gelding, living or dead; and a hundred more, all royally bred. At Genoa Junction Mr. Waters has founded at enormous expense, one of the completest and most extensive establishments either in America or Europe, and has stocked it with a collection of the choicest animals money would procure. In Columbia County, we have the Roys Brothers, who can show you any day two hundred and fifty high bred trotters upon their seventeen hundred acre farm. Then there are hundreds of other extensive breeders like Mitchell of Milwaukee, McKinney of Janesville, Leffingwell of Columbus, and Arthur Fox of Oregon, who have large and well equipped establishments, devoted wholly or in part to the breeding and rearing of trotting stock. These wealthy fellow citizens of ours, while not unmindful of their own interests no doubt, are doing a great work. They are contributing immeasurably to the wealth of the state. However, these millionaire horsemen with their mammoth establishments and invested thousands, represent but a small fraction of the money employed in this special industry. The average farmers are, after all, the real trotting horse breeders of Wisconsin, and their name is legion. In their care must this great interest remain. It will continue to thrive as they foster it; to languish as they neglect it. In all the wide range of agricultural pursuits, I know of nothing more engaging, nothing more alluring. New problems, constantly arising make of it a field of intellectual endeavor. Its average profits are rarely equalled in other agricultural lines, while the possibilities of drawing a capital prize lend a charm that makes of the humdrum of care a constant joy.

DISCUSSION.

Mr. C. A. Davis—I would like to ask at what age of the horse or mare you would expect the best results in breeding.

Mr. Parkinson—I don't think that there are any statistics that give any light on that subject—some of the best

horses in the world have been produced from old stallions and old mares, and some of the best from young stallions and young mares, and others equally as good from old stallions and young mares; there is absolutely nothing that gives any satisfactory answer on that point.

Mr. Broughton — Is development hereditary, or have we got to wait until after the development is accomplished?

Mr. Parkinson — The idea that I have sought to bring out is that horses used in any particular line for a great number of years, and inbred, that they are more apt to reproduce that peculiar gait or use to which they have been accustomed, than in cases where they have not.

Mr. Broughton — That is, accomplished development produces accomplished development.

Mr. Parkinson — That is the latest idea in respect to the breeding of trotting horses, — that you are more apt to get a trotter if you breed from ancestors that have been trotting for a good many years.

Mr. Anderson — I have listened to Mr. Parkinson with a great deal of interest, and I am pleased that Mr. Parkinson has taken the time and trouble to present to us so good a paper as that is. In my younger days I was certainly very fond of fast horses. I tried to have the fastest in my section of the country. I believe still in fast horses, I believe in the trotting breed of horses rather than the running breed, I would rather see a running race than a trotting race. Yet I did go to Chicago to see Maud S. trot her two fastest heats. There I was interested very much in seeing Mr. Vanderbilt as well as Maud S.

What I want to say more particularly to the farmers here, I being a farmer myself, is that I was afraid that some of these farmers might think that they could all become Royses, or all undertake to breed trotting horses or fast horses. That is a mistake. In all of my acquaintances, I don't know of half a dozen of men who have succeeded in breeding fast horses or trotting horses. In the first place there are very few young men qualified to train a horse, after they have the colt. Many of the best trotters have been developed

after they were sold by the men who raised them as colts, not knowing that the speed was in those animals.

Now, I would first recommend a draft horse to a man who wants to breed a horse for market purposes; secondly, I would recommend a coach horse. If any man here has a fine mare, I think he ought to put her to a fine stallion. I think the Case stallions are very fine animals, yet I don't think Mr. Case has made half as much money out of his stallions in any other way as he has for his services. I understand he charges \$300 for the services of his horse.

I would say to farmers who wish to make money raising horses, I mean the village farmer who doesn't expect to be able to train a horse, to first breed horses for his own use and for his own service, such as are serviceable upon his farm, and if he has a horse that he thinks is too large to be a good roadster, too large, even, for a plow horse, he can find a good market for him any day. I see by the reports that a horse weighing from 1500 to 1600 has a ready sale at from \$200 to \$250. I saw the sale of one pair of draft horses in Boston reported a short time ago, for \$800. They weighed 3600. The prices of draft horses vary according to the horses. Of course, I find trotting horses sell at a fine price, but they are very few.

I want to say to our young men, don't go into trotting horses for the purposes of making money by trotting them on the course. I met a gentleman the other day, a very fine man, who said he trotted fast horses and didn't like the society very well, and he went into the dairy business, where he found better company. (Applause and laughter.)

It is a mistake in Mr. Parkinson when he thinks these horse-racing men are just as honorable a class of men as Shorthorn breeders. (Laughter.) They will trot a race and know exactly who is going to gain it before they go in. They will take all the money an agricultural society will offer for premiums, they will take it all, and you may not see a very fast race either. (Laughter.)

But I wish to say that I am pleased with this paper, it will do good; but I don't want to have the idea held out that these horsemen are as honorable as the balance of us.

Mr. Butterfield — I wish to say a few words in relation to this matter, and I will confine myself to the trotting horse as far as may be.

I believe that this great breed of roadsters and trotting horses that we have here in the United States, is emphatically an American breed, and that if we are to have a high continuity of speed, we must breed for it. All people don't want farm horses; they don't all want horses for the plow or for logging wood, or for heavy draft purposes. But there are people that want a fleet, round-barreled, high-headed, gamey horse, that can keep up a high rate of speed for a distance. Those are the outgrowth and the result of breeding. They are not hap-hazardly born, but they are the outgrowth of the study and the logic of men of brains.

Now I want to say to the gentlemen over there that everybody doesn't want to ride after a pair of Normans when he goes out for pleasure. (Applause.)

Mr. Parkinson — They wouldn't get back the same day?

Mr. Butterfield — They wouldn't get back the same day, and they wouldn't break the Sabbath if they were to go out on Sunday. (Laughter.)

We have seen as this gentleman has pointed out, the great progress made in a few years in trotting horses. But, forsooth, my friend says that because some men will gamble upon this speed, the eminent qualities of these horses, that we should not encourage the breeding of them. It looks to me like watching the tap and slopping over at the bung hole (laughter) when you take that view of it. The biggest gamblers I know are the ones that gamble in wheat and stocks.

There are people that admire a horse, and I am one of them; I can see beauty in the make of those fellows, and I like to drive that kind of a horse, and I wouldn't like to see them die out in the United States because some gamblers would put up their money on them. But if agricultural fairs are to have a show of the best horses, which is the thing I like, they must have blooded horses. I like to see a fat steer and to eat a piece of it; but my highest enjoyment is to drive a gamey horse that has good horse sense; and that is a thing that don't come until it is bred in his head. These

old breeds we had years ago; one of them would trot a half a mile and give up utterly, couldn't go a rod farther; he was out of wind, he was demolished (laughter). And when you undertook to punish him to keep him at it, after he had gone a little way, he would shoulder himself and quit. (Laughter.) We don't have them any longer. We have horses that can go one mile, two,—ten,—go for the doctor and get back again! (Laughter.) And when you put one of them to farm work you have a horse that has some stamina in him, some physical endurance and grit in him. He can plow and won't go back in the breeching until night. And if you get one of some size, that is a portion thoroughbred and a portion Hambletonian, he is a better horse for farm purposes than the ordinary ten or eleven hundred horses. A Morgan or Clyde you have to put in and feed, and let them rest. Yet there are men that think there shouldn't be anything of the kind in the world, because evil comes of it! That is the exception I take to the first remarks.

Mr. A. O. Fox—I want to say just a few words in respect to Mr. Anderson. I have profound respect for Mr. Anderson. He is one of my father's oldest friends, and I believe I may consider him a good friend of mine. I hate to say anything that might break that friendship—

A member—Pitch into him!

Mr Fox—But I believe Mr. Anderson is all wrong in this horse matter, and I would like to speak a few words to him as a farmer, not as a trotting horse man. I was born and raised on the farm, as Mr. Anderson knows, and a good portion of my time has been spent with heavy horses, and some carriage horses, and some road horses; and for the past few years we have had first-class road horses, or carriage horses to sell, which were always a ready sale, and always brought more money than any draft horses. We have sold more draft horses than carriage horses, but for not near so much money. This circumstance induced me to purchase one or two good, standard trotting-bred stallions, and crossing them on the best mares that I could obtain—mares that would be likely to produce carriage horses. The result I have found to be about like this: I don't have to go to the ex-

pense of breaking the colts from my best mares at all; I can sell them for a great deal more money when they are weaned than I ever got for a draft horse when he was five years old. (Applause.) That is a fact. I have a few good mares, from which I never have to break the colts; I can sell them readily at two to three hundred dollars apiece when weaned. Those are the high bred trotting mares.

I am no trotting horse man. I have no race track; I don't own a sulky, and I don't want to; but I am raising trotting horses and selling them for more net money than I could have got from draft horses.

I think that the chief difficulty with the horse breeders is, that they are not careful enough in studying lines of breeding, they don't understand trotting horse breeding, consequently the crosses which they make are not such as command the respect of the trotting horse men, and don't command the highest price. Then, there is a class of farmers who think that because somebody has an imported trotting horse stallion that they must run every mare they have got — common, indifferently bred mares — to them. This, of course, will breed a class of horses such as Mr. Anderson speaks of. It would be very far from my purpose to induce any man in this audience to breed mares from horses not trotting bred; it would be a great failure. There is room, however, for legitimate business, and very profitable business, in the raising of trotting bred horses. Let any man in this community take a large, coach bred mare that is clean boned and sound and well built, and cross her to a large, standard bred stallion, and he will breed a horse that will bring him more money at five years old than he ever got before. That is my experience on the farm, and I have had hard work to keep them from taking away from me my best bred colts, at prices better than I ever got before.

Mr. Anderson — I agree with Mr. Fox exactly. I can recommend any farmer who has a nice mare to breed her to something of that kind; but the training and trotting of these animals is what I object to. If they would all do like Mr. Fox, who raises good stock — I know he had a good Percheron horse that took the premium at our fair, and I know

he has fine stock for I have seen it, and I know he is a fine farmer and takes good care of his stock — if they would all raise them as Mr. Fox does, and sell them, then I am in favor of them. I am in favor of fast horses, as I told you before I went to Chicago to see the fast horses trot. But I am opposed to a young man undertaking to breed horses for that purpose and then train them and trot them for money, and then go into the gambling business at the fair — that is what I am opposed to. I am not opposed to breeding racing and trotting horses, yet I would prefer for an average farmer to go into raising coach horses. They sell as well — good, large coach horses, fine color, good style, sixteen hands, or sixteen and a half hands high, trained to step along eight or ten miles an hour — you can get almost any reasonable price for such horses, because wealthy men will have them for their big carriages. But I object to the average farmer trying to train a fast horse, for they fail in every instance. I have never known anybody to lose money by breeding trotting horses, but I have known many to lose money by training and trotting them — I mean the average farmer. There is a man in Kentucky makes money at that, Mr. Case has made money out of that business; but my experience extends a good ways, not only in this state, but in Ohio and Pennsylvania, and I have known men who have lost, I may say, fifty to a hundred thousand dollars in that business. (Applause.)

Mr. Butterfield — I just want to say one word I missed before, and that is that I believe that in breeding horses you should breed to a class. The gentleman probably may have undertaken to raise trotting horses by crossing onto a cold-blooded Norman; and if he did so I know pretty near what sort of an animal he got; he got a mongrel: he got a horse with big legs, a slab-sided horse, that wasn't built either for draft or trotting, and he got disgusted with the thing.

I undertake to say that the breeding of trotting horses is legitimate, and is a good thing; but when we undertake to cross what is termed in slang parlance, perhaps, a cold-blooded horse on a thoroughbred, we get a mongrel that is neither one thing nor the other. These people that under-

take to raise horses without understanding and looking into the science of breeding, will make a failure, and their property is not salable; but men that use trotting mares and trotting sires, if they want to use colts for racing purposes, if they are properly bred they have a standard value in the market among horsemen. In my judgment the mistake made by farmers is in mixing up this thing. They should follow a class, breed to a class.

Mr. Ezra Goodrich — The breeding of trotting horses, as far as my experience goes, is much like the breeding of smart, intelligent, successful men, from some conspicuous sire. (Applause.) It is about one in a thousand that makes a distinctive mark, and a valuable, speedy horse.

I, like some others here, like a good horse, naturally like him best of anything on the face of the earth, unless it may be a good woman. (Applause and laughter.) So I naturally deal with them and drive them. I have on my farm at home an ordinary dung-hill horse — I might say a pair of them — ordinarily bred and ordinarily built, a team that works at all uses on the farm, a common looking team, driven by a common looking man. (Laughter.) And I challenge the trotting horsemen of the state of Wisconsin to pick that team up on a common wagon on a common road, and pass them, and I challenge them to pass one of them single. I have had high bred running horses try to run by me, and follow me for seven miles, and not get there then! (Applause and laughter.)

This horse was bred by an old gentleman on the farm, and when a colt he was so insignificant looking, that he gave him to his little grandson, made him a present of him. And I speak of it here for the purpose of encouraging others, that it is not altogether in the breed. Take any horse that you have on your farm that has the appearance of having action, or having speed, or having nerve and power and vigor and go, and give him the chance of some training, and you will find that you have got a speedy horse raised by a common farmer, that you never dreamed of having. These men, like Mr. Case, who have made phenomenal success in breeding fast horses, bred from noble sires and

ancestors on both sides, and devoted their entire lives simply to the development of speed in those horses. But let any farmer in the state of Wisconsin take the stock that he raises on his farm, and let his farm boys have the chance to develop the animal that shows the marked characteristics of speed, and you will get speed where you least look for it, and you will rejoice the better for getting it, and it won't cost you anything. That is the kind of a horse I enjoy, and there is no money lost in it.

Mr. Babbitt — I think that the remarks of Mr. Goodrich are calculated to mislead very much. If he will give the pedigree of that animal he owns that can trot so fast that no thoroughbred can catch him, I will guarantee that he is the best bred horse in Rock county, or where that man lives! (Applause.) The idea of disputing the proposition that blood will tell, is something that I can't swallow. Now if Goodrich will tell the truth about this thing, and I have no doubt he will,— and go back and give us a fair and honest account of the birth and the breeding of that animal, I would like it here, and then we will get some benefit out of this thing.

Mr. Broughton — It was a Justin Morgan.

Mr. Babbitt — Probably it was a Justin Morgan, or a Clay or some other distinctive blood.

Mr. Goodrich alludes to another idea that ought to be spoken of,—that great men have inferior children. We know that most great men are passionate men; they let their fancies run away with their judgment; and when you come to look over the history of the great men who have lived, men whose names are the honor and the pride of our country, you will find that in the selection of their wives they made tremendous mistakes. There is no man here that breeds stock but what believes that the best and the surest way of success in breeding is to be sure that the female line is thoroughbred and right, and any other course you may take will lead you astray. Take the breeder in this convention who takes particular pains with his females, with his cows, his heifers, his fillies, his mares, and makes judicious crosses, and he is sure of success.

Now I am not particularly in favor of a pure trotter. I believe a trotter to be of value, should have size; he should at least weigh 1,160 or 1,170, along there—1,100 anyway. And another thing, when you have a horse of that kind, his shoulders should be right, so that when you put him into the plow you won't spring him off the very first forenoon you work him. Look at the crosses a little, for you have to be careful.

Your horses will cost you very little feed. Now my colts cost me comparatively nothing this year in comparison with anything else I have on my place, for the reason that I am drawing out my grain to my fat cattle and letting them eat what they want, and then put in your stockers and let them take what they will, then turn in your colts and they clean the thing up pretty well,—they take much of what the rest have refused, they are foragers; then put in your hogs and they will gobble up the balance; and I very much prefer to do business that way than to cut up my corn and do my cattle's chewing for them; I very much prefer that they would do it for themselves. A few horses on your place will cost you very little. Mr. Clark, who has gone down to attend the Short-horn convention, told me that four years ago he hadn't a Short-horn on his place that he didn't buy and pay for by his colts, that cost him nothing because they were foragers; and when he got a fine lot of colts he would sell them, or trade them off for Short-horns, and stock his place in that way. Let us have diversified farming if we are to live on a farm! (Applause.)

The chairman—The time for the discussion of this paper has expired.

THE FACTORS WHICH GOVERN THE VALUE OF BARNYARD MANURES.

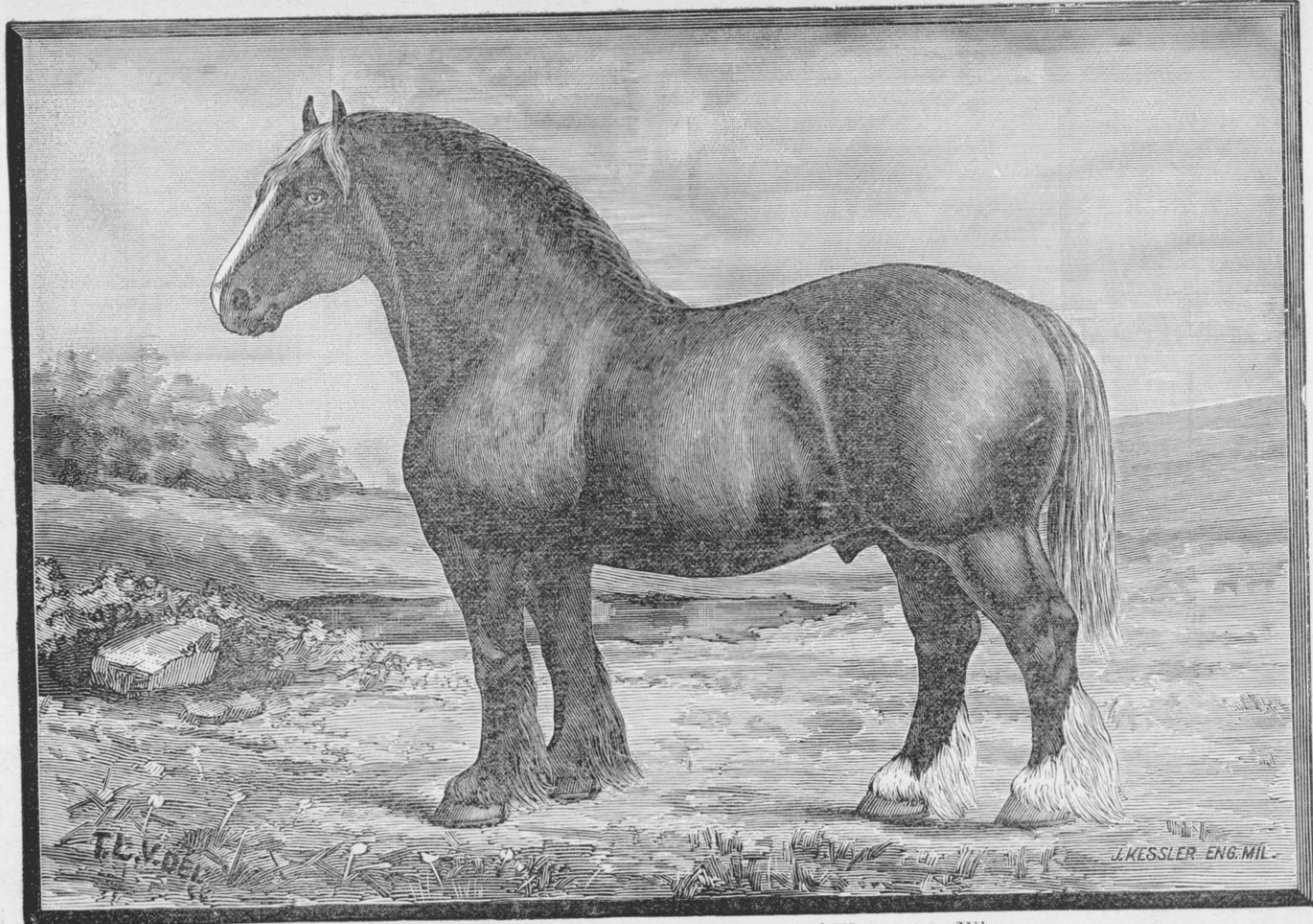
BY PROF. W. A. HENRY, DIRECTOR AGRICULTURAL EXPERIMENT STATION,
STATE UNIVERSITY.

In all civilized countries with dense population, land has a high value and labor a relatively low one; in such countries we see the farmers spending much labor and often no

small sum of money to maintain or advance the fertility of the soil; indeed much of his energy is expended in this direction. In America we have seen up to the present time the anomalous condition of the government giving away land in goodly sized blocks to all who would occupy it. All over that portion of the West which we consider well settled we see improved land selling at from 15 to 30 dollars per acre, which sum represents just about the monthly wages of a hired man during the summer season. Think a moment; we give our hired man in many instances enough money for each month he labors for us to buy an acre of the very farm he works on! Were we to pay him in land, our hired man would take from us each year a field ranging in size from eight to twelve acres. With such relations between the price of land and labor, with a virgin soil to work upon, it is not to be wondered at that our farmers have been slow in the past to give the subject of manures any attention. That they will continue to be so indifferent on this subject in the future is not to be considered for a moment; the conservation of the fertility our soil yet possesses and the addition thereto in many cases is even now a most important topic with our farmers and is brought up and discussed vigorously in all their gatherings.

Let us study for a little time the subject upon the program, "the factors that control the value of barnyard manures." In attempting the subject I cannot stop to more than mention what may be called the mechanical effects of certain manures. The carbonaceous matter of straw and litter renders much of our barn yard manure bulky and gives it a most valuable effect mechanically in many instances. To illustrate, a load of half rotted straw, plowed under on a strip of heavy clay land may so lighten up the soil and let through the moisture of the rains and the air that from this cause, the straw would be of more value than would all the real plant food it might contain. At this time, however, I must confine myself to a consideration of the real plant food of barnyard manures.

The three most important elements to be considered at this time in this connection are nitrogen, phosphoric acid



"HARVESTER," 3681 — Owned by Dr. VALERIUS, Watertown, Wis.

and potash; not that these are the only substances the plant obtains from the soil but rather that they are the ones most apt to be found wanting in our soils. Such other substances as lime, silica, magnesia, soda, etc., that enter into the composition of the plant along with these just named, are usually found in all soils in sufficient quantity to meet all the demands of our crops. Confining ourselves to a consideration only of the three substances, nitrogen, phosphoric acid and potash, and ignoring the mechanical effects of manures as above referred to, we may say that the value of barnyard manure depends upon the quality of the food given primarily, and secondarily, upon the animal to which it is fed. Let us first take up the quality of the food. This is the main factor in determining the value of manures. A moment's reflection will show us that the animals of our farms cannot create any of the elements of fertility of and within themselves, but that whatever we find in the manure heap must have had its source in the food supplied. The cow or horse is but a machine in this matter: we cannot get more straw and grain at the rear of the threshing machine, than we put in the sheaves at the front end; the machine is helpless to add or subtract from the result. If we give our cattle food rich in fertilizing elements, we may hope to get a large proportion of them back again in the droppings.

Horse manure is richer than cow manure mainly because we feed horses food richer in fertilizing elements than that of our cows. Horses also dilute the excrement less with water. Droppings from the hen house are thought to be very valuable as manure; the reason of this is that the food of chickens is largely grain with the addition in summer time of all sorts of worms and insects. Were it possible to feed them on straw and corn stalks the droppings would be of little value in the manure heap. We may hold then that to get rich manure we must supply our animals with rich food. In the second place we may note that the animal may modify the quality of the manure to a certain extent, because of the amount taken out of the food by the alimentary tract for fat or growth. A full grown horse which neither gains nor loses in weight must give back in the

manure all the potash, nitrogen and phosphoric acid we supply him in his food. In the same way full grown steers when fattening, take almost nothing of the elements of fertility out of the food supplied since their gain in weight is mainly fat, and little nitrogen, potash or phosphorus is added to the body.

Young stock take out enough of these elements to build up the bony frame and tissues of the body. Milch cows, because of what they store up in the milk which nature intends for the frame work of the calf give back less than other kinds of stock for the food consumed. Stewart gives the following tables which are in point upon this topic.*

TABLE I.
Nitrogen Stored Up and Voided for 100 Consumed.

Animals.	Stored up as increase.	Voided as solid excrement.	Voided as liquid excrement.	In total excrement.
Sheep.	4.3	16.7	79.0	95.7
Oxen	3.9	22.6	73.5	96.1
Pigs	14.7	21.0	64.3	85.3

TABLE II.
Ash Constituents Stored Up and Voided for 100 Consumed.

Animals.	Stored up as increase.	Voided in total excrement..
Sheep.....	3.8	96.2
Oxen.....	2.3	97.7
Pigs.....	4.5	95.5

It will be noted in Table I that from 85 to 95 per cent. of all the nitrogen supplied in the food of pigs, sheep and oxen was recovered in the excrement, and that from 95 to 97 per

* Stewart's "Feeding Animals," p. 418.

cent. of the ash in the food was likewise recovered. Could we carry back to the field then, in the manure, all of the fertilizing elements taken off in a crop except those which our stock took out of it for their nourishment we would rob our land of its fertility very slowly indeed; but let us note by the tables just quoted that most of the nitrogen is in the urine or liquid portion of the excrement; the same is true of the potash while the phosphorus is held for the most part in the solid portion of the excrement. If then, we allow the urine of our cattle to go to waste through leaky floors or by washing away in the barn yard with the snows and rains, we have lost the greater portion of all that was valuable in the droppings.

I come now to the last point of this paper, a discussion of the fertility contained in our feeding stuffs. In the eastern states, along the seaboard, the farmers are already paying out enormous sums of money annually for commercial fertilizers, the valuable elements of which are nitrogen, phosphoric acid and potash.

The farmers of New Jersey pay out about one million and a half dollars annually for commercial fertilizers, while North Carolina spends about three million and Georgia not less than four million dollars annually in the same way. Think a moment of this enormous sum being expended upon the crop before it is planted, to which cost must be added the expense of preparation, cultivation and marketing, all of which must be paid for out of what the crop may realize. Unless we at the West study the problem as we should and make an earnest endeavor to conserve the natural fertility of our soil, we, too, must soon become buyers of commercial fertilizers in the market as our eastern brothers already are. These commercial fertilizers at the East are inspected by state officials and sold on guaranty — i. e., the manufacturer and seller warrant or guarantee that the contents of the bags containing the fertilizers will show by chemical analysis a stated per cent. of one or all of the elements named, viz.: nitrogen, phosphoric acid and potash. If samples upon analysis show that the contents of the bags run lower than the guaranty, then the seller is subject to

prosecution. At the places of manufacture of these commercial fertilizers, the materials come in by the ship load, saltpeter from South America, potash from Germany and phosphate of lime from South Carolina and other places. So large is the volume of business that the materials are bought and sold upon analysis the same as sugar, and it is a surprising fact that the prices of the substances under consideration have a narrower range in value than do raw sugars in the same great marts. In order to get at the value of our manures, let us then get the total amount of fertilizing elements contained in the food articles consumed by our cattle, and knowing the amount in these and the proportion taken out by the cattle, we can easily figure what is left in the manure and their commercial value. The following table,* arranged by E. F. Ladd, chemist of the New York Experiment Station, shows the amount of phosphoric acid, potash and nitrogen in one thousand pounds of our common cattle feeding substances as determined by analyses at that station. I give this table because it is the most recent information we have on this most important topic, though it is doubtless true that the analyses of the several articles are too few in number to be held as more than a general guide.

*Sixth Annual Report of the New York Experiment Station, page 455.

TABLE III.

Showing Pounds of Fertilizing Matter in 1000 Lbs. of Farm Products and Feeds.

Substances.	Dry Matter.	Ash.	Phosphoric acid. P ₂ O ₅	Potash. K ₂ O.	Nitrogen.	Value of fertilizing elements contained
Red clover.....	846	54.9	2.5	13.1	19.3	\$3.57
Alsike clover.....	846	72.5	3.8	24.2	21.8	4.42
Orchard grass.....	846	53.5	4.1	20.1	11.1	2.67
Timothy.....	846	42.2	2.5	14.5	10.4	2.27
Fodder corn (green)	179	11.0	0.5	2.6	2.4	.48
Corn fodder.....	700	50.3	0.9	6.1	6.5	1.27
Corn cobs.....	900	17.8	0.1	8.1	2.3	.67
Wheat straw.....	821	41.6	1.0	5.2	4.8	.77
Oat straw.....	837	48.5	0.6	13.5	3.8	1.14
Beets.....	10	2.0	0.1	0.8	0.3	.08
Oats.....	890	31.5	13.1	3.9	17.8	2.91
Wheat.....	867	15.7	7.2	3.7	18.9	3.32
Corn.....	844	14.1	7.7	3.6	13.9	2.60
Flour.....	868	3.7	1.9	1.2	14.6	3.34
Wheat bran.....	850	50.4	25.5	8.3	22.5	4.97
Wheat middlings..	860	33.8	16.9	6.2	20.7	4.19
Shipstuff.....	860	49.5	20.2	9.7	24.1	5.00
Cotton seed meal..	917	67.3	29.3	19.6	72.1	12.05
Linseed meal.....	893	51.4	18.7	11.3	52.4	9.25

The figures in the last column were prepared by myself, to show the value of the fertilizing elements in these food articles at the prices paid for the same elements when bought in the shape of commercial fertilizers. The prices assumed are as follows: Nitrogen, 15 cents per pound; phosphoric acid, 5 cents per pound and potash 4 cents per pound. These prices are reasonable, below rather than above what the eastern farmers have to pay. It will be borne in mind that the figures in the last column are for one thousand pounds and not for a ton; to get the value per ton, we must double the figures given. Let us examine the table, taking the first substance on the list, Red clover. By the first column we learn that in each one thousand pounds of Red clover hay, we have 846 pounds of substance free from water; further, we note that were this thousand pounds perfectly burned it would leave 54.9 lbs. of ash. In this ash

there would be 2.5 pounds of phosphoric acid and 13.1 lbs. of potash. Analysis of the clover would show 19.3 pounds of nitrogen, which would pass into the air with other organic matter should we burn up our thousand pounds of clover. 2.5 pounds of phosphoric acid at 5 cents per pound, 13.1 pounds of potash at 4 cents a pound and 19.3 lbs. of nitrogen at 15 cents a pound would, added together, give \$3.56; or, for one ton, \$7.12, as the value of the fertilizing elements in one ton of Red clover hay. We find in the same way that a thousand pounds of oat-straw has fertilizing elements in it worth \$1.14 or \$2.28 per ton. Now, knowing that our stock takes out of the food only from one or two up to about 20 per cent. of the fertilizing elements contained in the food to build up their bodies and that the balance is voided in the excrement, we can see at once that the manure of our feeding stuffs have a much higher value than most of us are willing to allow.

But some farmer will say, "You don't propose to teach that the manure which I may get from a ton of hay is worth something like \$7 to me, do you?" That is just what the table shows; when the farmer in New Jersey or Georgia pays from \$20 to \$40 per ton for commercial fertilizers, he does not stop to ask the seller if the fertilizers are worth to him what they cost; he knows he must pay market prices whether or not he ever gets back the money he puts in. Hay may be selling for \$10.00 a ton in the market; whether I can make a profit out of hay at this price depends upon circumstances best known to myself. This much is assured: When the Wisconsin farmer has to go into the markets of the world and buys his commercial fertilizers as his eastern brother farmers are doing, then he will have to pay the prices I have indicated, more too, rather than less. This being true, it is highly important that we bend our every effort to conserve this great factor so essential in successful farming? Is it not easier to save what we have and thus keep out of the markets as buyers than to foolishly waste and in our poverty go in the markets of the world to compete as buyers with others who like us, have a depleted soil.

All over Dakota, Minnesota and Manitoba the farmers are

robbing the virgin soil of its fertility and selling it in the wheat crop. Minneapolis is the greatest milling center in the world; in those great mills the wheat is split up into flour for human consumption, and bran and shorts as by-products.

This bran and shorts hold a large part of the fertility from the soils upon which the wheat grew. Since bran is bulky it cannot be hauled by vessel or even by freight as advantageously as some other products. If we in Wisconsin, located near these mills and getting relatively low freights, can get this food for our cattle and after using it for feeding have left rich fertilizers for our lands, we can by a reasonable effort make our state the most fertile in the Union, our farms growing richer and richer with the fertility imported from the farms of the states lying to the northwest of us. The importance of this topic is apparent upon reflection to every thoughtful man who looks into the future as well as considers the present; but we must carefully conserve all the fertility now in our soils guarding it with jealous care. If we are tempted to grow indifferent to the matter, we have but to reflect that unless we are careful we soon will have to be the buyers of commercial fertilizers like our neighbors at the east.

The points I have tried to make in this paper are these.

1. To have rich manures we must supply our cattle with rich food.

2. The value of the manure depends more upon the feed than the animal.

3. Milch cows take out more fertility from the food than other kinds of stock, growing stock next, and working and fattening animals the least.

4. Very rarely does the fertility taken out of the feed by our live stock amount to one-fourth of that in it, and it may not be one-twentieth.

5. Nearly all the phosphorus is in the solid portion of the excrement while the nitrogen and potash are in the urine; hence if we allow the urine to go to waste we have only one of the three valuable elements left in any quantity in what remains.

6. In buying feeds we should always have in mind the manurial value that they contain as well as the feeding value.

DISCUSSION.

Mr. Davis — When is the best time to save the qualities contained in the manure — when it is fresh from the stable or after it is rotted?

Professor Henry — In general, I believe the quicker we can get the manure to the field, with our Wisconsin farming, the better. But the farmer can't haul out manure with three feet of snow on the ground. Under these circumstances the manure should be piled in as few heaps as possible, and in a place sheltered from the rain; there are but few farmers in this state who keep their manure sheltered from the rain; the Wisconsin farmer has not come to that point yet, but I think they ought to, and I hope they will. A farmer ought to have his manure housed until he can get it on the field, and then get it there as soon as possible.

Mr. Goodrich — Touching the question just answered, a few years ago I visited the neighborhood of Elgin, which is the great dairy district, and inquired particularly in regard to that point, and I found one intelligent, successful and practical farmer, who had tested the matter by drawing out on one strip four rods wide across a twenty acre lot manure from the farm yard as ordinarily handled, and on the next four the manure fresh from the stable, without being rotted. He showed me the field, and you could see the difference in the products upon the land as far as you could see the difference in the products upon the land as far as you could see the field — it was all plowed and sowed at the same time — that on which the fresh manure was put being a much darker colored, greener growth of grass.

Mr. Allen — In reference to clover hay and the manner of feeding it, I think I can speak with some knowledge. I feed sheep, and I have a long shed in which I feed them, and the manure and the liquid from those sheep, where it has been kept under the shed there, is worth three or four times as

much as that I take from my barnyard, where it has been exposed to the wet. The most advantage that I have had from scattering manure has been after mowing my first crop of clover hay; then I set all the help I can get to work scattering my manure from the barnyard upon that newly mown clover field. And the new clover growing up immediately after shades it, keeps the sun from evaporating it, and holds the nutritive qualities in the manure. That I have found to be a most decided advantage.

Mr. Toole—I wish to inquire what is the most feasible way of saving the urine. If by absorbents, what shall we use? I have heard of throwing in the droppings of the horse stable back of the cows, which it seems to me is a good idea. I remember some time ago I noticed at the university farm some arrangement of slats under the horses, so that they might be kept dry until the urine worked away from them. I would like also to know if that has been satisfactory. It was rather a novelty to me.

Professor Henry—A barnyard floor can be made by putting down common boards first, and then building paper, and then putting on this asphaltum roofing tar, which can be bought for a small price per barrel. Melt the tar and put it on the floor, get two-inch plank and set them right into that while it is hot, and that will make a perfectly tight floor, which can be made to slope as you like. Then have an oak rack on which the horse stands set over that. The urine runs out from under the oak rack on the tight floor, and passes back of the horse, where a drip can be made to carry it off, or absorbents used, and the horse all the time stands on perfectly dry slats, which is better, I think, than the other way, and enables one to save all the manure. The putting of horse manure back of the cows is a very excellent method if the stables are so arranged that the horse manure can be got into the cow stable without much extra handling.

The credit for urging the use of land plaster as an absorbent is due to Mr. W. D. Hoard, of *Hoard's Dairyman*, and I consider it a most excellent one. Back of the cows where the liquids are, you should throw in enough land plaster to

absorb all the liquid, and it will tend largely to keep down the odors in the barn—an important consideration, of course, with dairy cattle.

Mr. Williams—In Massachusetts they have barns for their cattle with a basement, and the basement is cemented over, and the liquid is all dropped in there, and it don't lose its moisture. That is the theory in Massachusetts.

Mr. Allen—I have been throwing land plaster upon my barn stables and my barn manure, for more than twenty years it has been a practice with me, and I have endeavored to preach it somewhat, but my voice has not been loud enough to reach very far, notwithstanding that the advantage of it is a truth that is as fully established in my mind as is the fact that the sun shines to-day.

I wouldn't give a cent for a plank floor; I would rather not have it than to have it. A good floor, made of clay put in in the summer and well stamped and packed down, will hold the urine better than a plank floor after it is trodden,—it will hold it as perfectly as a dish. I would always recommend putting in plenty of straw for bedding, and letting that become an absorbent of the manure; then draw it out, and then throw on your plaster; that will fix it.

Mr. Williams—When straw is put in those places, throw on lime, and it will rot better.

Mr. Allen—Plaster is worth a dozen of it.

Mr. Palmer—This winter I am cutting my corn stalks and feeding them in the barn. I didn't suppose my stock would eat up all those dry corn stalks clean, but still they eat about double what they did when I threw them in the yard, and what is left makes the best bedding I have ever had. I have always used plenty of straw, of course, and I have used horse manure with the cattle to some extent, but I find that the cut corn stalks make a fine bed, I like it better than I do straw, and I shall always use it hereafter.

Mr. Toole—I had occasion to repair the plank floor of my stable a while ago, and when I got down under it I found I had a perfect mine, judging by the mellowness of

it. I have found a great deal of good in the use of dry earth.

It seems to me it would be worth a trial to scrape up dry earth in the summer for use in the winter. It will take up a great deal of moisture, and it will sweeten up things more than anything else. And it must be more than a mere loss of fertilizer when we consider the condition of things under the floor. Very few would realize it unless they would tear up the floor and find out how things are under the horses. And I believe it must be a danger to health as well.

Mr. Clemmer, of Albany — The farmers down our way, who had more or less room for storing something for bedding last fall, used leaves, going out to the sugar bush and gathering them in the fall, and they are the nicest thing for that purpose I ever saw.

Mr. W. Bray — When is horse manure the strongest, after it is heated in the pile or before?

Mr. Broughton — Immediately after it is dropped.

Mr. Allen — Always.

Mr. Williams — After it stands it heats and burns, and there isn't much moisture in it.

Mr. Allen — Worth about as much as chips.

Mr. Toole — I would like to inquire further about the fertility obtained by certain feeding. I suppose the idea is that we may feed not only for the fattening power, but also for the value to us of the fertilizer as well. I see a great valuation is put on the nitrogen in the feed. It has occurred to me as to what extent we can store up nitrogen in the soil. I am under the impression that we are more likely to lose than anything else.

Prof. Henry — I tried to make the point that in Wisconsin we ought not to place such high value on nitrogen in manure as on the phosphoric acid and potash. There is a great deal of experimental work going on. Hundreds of men are thinking more or less on that problem, and experimenting, and I think we are going to have many new ideas in five or ten years in regard to nitrogen and phosphoric acid and potash. Four-fifths of the air over the earth is nitrogen, but it is in such shape that the plant cannot use it — it has

been held so in the past. But in some way the earth does get hold of some of it, and get it into a shape so plants can use it. But of phosphoric acid and potash there is practically none in the air. If you don't carry some and put it on the field there is no way for the field to get it; but there is some way for it to get nitrogen, so we must be more careful about phosphoric acid and potash. What we have in the bank is all that will come there, and we must put in more; but with nitrogen it is different. It looks as though somebody was depositing something in the bank to our credit, but who the depositor is, he does it so quietly, we don't know.

Mr. Boughton — The air being nitrogen and oxygen, when by the processes of natural chemistry the oxygen is separated from the nitrogen, what becomes of the nitrogen, that is set free? What does it do with itself?

Prof. Henry — It hangs around perfectly worthless.

Mr. Broughton — Lies around loose.

Prof. Henry — Don't earn its board. In this room a plant would die for want of nitrogen, and yet four-fifths of the air that bathed its leaves would be nitrogen. In some way, we can not now say how, it seems most probable that the free nitrogen of the air is fixed in the soil and put in shape to be taken up by the plant as food; this is one of the problems that chemists are working on, and we may hope for light on it in the near future.

Mr. Allen — Is it possible for a plant to grow without coming in contact with earth, simply from atmospheric influence and water?

Prof. Henry — Yes.

Mr. Allen — Boussingault, a French chemist, gives some interesting experiments in growing clover and other things. He took white sand — I think you will find it on page 47 of his work — and burned it so as to destroy all the vegetable matter in the sand, boiled water so as to destroy all of the animalculæ in the water, and then planted his seed in the sand and watered it with the distilled water. In five days the seeds sprouted. Then he covered it entirely with a cloth; and in four months' time it had grown simply by be-

ing watered by distilled water. That growth was placed in a porcelain vessel, and the clover grew to be six inches long in that porcelain vessel, and increased its weight about 300 times the weight of the seed.

Mr. Broughton — Mr. Allen; doesn't that prove the truth of spiritual growth?

Mr. Allen — Yes; I guess that's it! (Laughter.)

THE JERSEY INTEREST.

BY T. L. HACKER, COTTAGE GROVE.

I had only a few days' notice, that I was expected to give a paper on the Jersey — and could only devote a few odd hours to the work on which many days might be profitably spent. Indeed, were she not a cow of such wonderful performances, with ample data from which to draw, I would not have responded to the call; and, if I fail to present her claims as forcibly and clearly as her merits demand, it will not be for want of facts to substantiate them. It is our good fortune to live in an age of rapid progress and he who has kept abreast in the front line of this advancing column of workers and writers, looks back a few years, cannot but be amazed at the immense strides that agricultural thought has made. No branch of industry in the civilized world has received such mental stimulus and has made such an advance in scientific research as has that of agriculture. It is but a few years since our best farmers fed their animals regardless of the chemical constituents of the food; we fed it simply because our fathers did so, never investigating from a chemical standpoint whether we were making the best use possible of the food and the animal; whether it was proper food, or the animals we were feeding were fitted for the purposes for which we were using them.

Native cattle and old, hap-hazard ways of farming do not bring such returns as our present conditions require, and the general drift of the intelligent farmer, is towards specialties, each branching out in the line which to his taste and peculiar surroundings, seem most advantageous.

With the Jersey breeder, the problem to be solved is, how to breed and rear, so as to uniformly produce the specific butter cow. The breeding of Jerseys simply for their beautiful deer like faces, crumpled horns, solid fawn, bronze or squirrel gray colors, with black tongue and switch, is fortunately among the follies of the past. Every breeder's success will sooner or later, be measured by the butter standard. It may be excusable as a secondary matter, to consider beauty of form and color, and indeed, I consider it a fortunate condition when beauty is combined with utility. I am free to admit that it was her beauty which first attracted me, and, had it not been for my weakness in that direction, I might still, as in boyhood days, be rearing and milking the "general purpose cow." In the great strife for superiority men follow lines of thought and action, for which they have natural gifts, making a specialty of some particular business or profession, and giving it such thorough study and investigation, that they are soon acknowledged to be superior in their chosen line of life-work. The law student soon discovers that if he attempts to learn all there is of law, a lifetime would be required to accomplish it, hence he selects some special subject, and, concentrating all his mental power on that, soon becomes master of it. This is true also of our best educators, physicians, farmers and business men generally, and *must* be so in order to accomplish the best and highest results. Applying this rule to the subject in hand, we find nature ready to assist in fitting her creatures for the efficient performance of the duties required.

The nomadic life of the Arab has given us the Arabian horse, the centuries of heavy draft work required in France and England has produced the powerful Percheron, Clyde and English shire.

↙ We find similar results in the bovine race; the Short-Horn, Hereford and Angus have been trained for beef, the Holsteins and Ayrshires for milk, the Jerseys and Guernseys for butter. It matters little where the remote ancestors of the Jersey came from; she is, as we now find her, a product of the island of Jersey, an outgrowth of her surroundings and *treatment*. For centuries, breeding for

richness of milk has been going on, the population being so dense and rents so high there was no room for *poor* cows. It was most emphatically the rule of the "survival of the fittest." Centuries of vigorous pruning out of all inferior animals has raised the little cow to her present proud position, as the *best butter* cow in the world.

Herein we find the peculiar circumstances that created this breed. These farmers had more than average intelligence. With no market for milk and every demand for butter, is it any wonder that the cattle should adapt themselves to the wants of their owners? The extremely domestic method of handling the cows must have had a strong tendency to reduce size and sweeten their tempers; but of far more importance than all these, she has been, by force of an isolated position, *bred* in line *until she re-produces* her characteristics in her off-spring, with that precision that alone marks the thoroughbred animal.

The first mention made of testing Jersey cows for butter is of Flora 113, in the year 1853, by the veteran Jersey breeder, Thomas Motley. Flora, when three years old, and two and a half months before third calf, with ordinary feed, made 14½ lbs. in 7 days; after third calf, she made 511 lbs. 2 oz. in 50 weeks. In the same year Countess 114 (of the same importation) made 16 lbs. in 7 days on grass alone, also Rose 240, made 17 lbs in 7 days. After Rose, no tests are reported until fourteen years later, when the cow Eureka McHenry was tested in June, 1867, yielding 14 lbs. in a week. Five years later Jenny 766, Imp., was tested, making 14 lbs. 9 oz.

In the fall of 1872, Mr. John H. Sutliff began a year's test of his noted cow Pansy 1019, completing it when she was a little more than six and a half years old, she made 574½ lbs. The next yearly test was of Jersey Belle of Scituate 7828, on ordinary pasture and two quarts of bran daily in summer, and rowen hay and the same bran in winter, made 705 lbs.

The following year she made 25 lbs. 4 oz. in 7 days. This performance was considered so remarkable that it was generally deemed the maximum annual yield had been reached, and it is now claimed by many, that if the science of feeding had been as well understood then as it is at

present, she would have at least equaled, the yield of the best cows of to-day.

The next recorded test of note, was that of the great Eurotas 2454, between two calves dropped within a year, in 340 days, she gave 7525 lbs. of milk which made 718 lbs. 1 oz. of butter ready for market; during this test, she made 23 lbs. in 7 days.

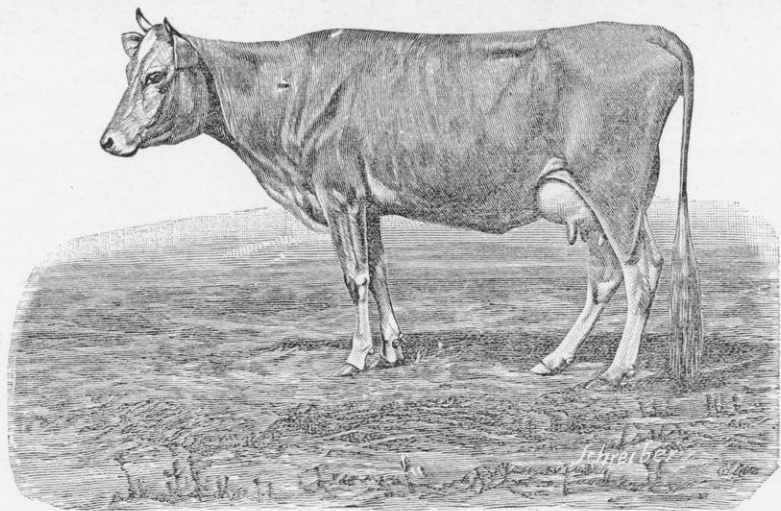
Mary Ann of St. Lambert 9770, when 5 years old made 867 $\frac{3}{4}$ lbs. of butter in 11 months and 5 days, and in one week produced 36 lbs. 12 $\frac{1}{2}$ oz. from 245 lbs. of milk, or a pound of butter from 6 $\frac{2}{3}$ lbs. of milk.

Jersey Queen of Barnett, gave 851 lbs. in a year. Masena 25732, between calves a year and fifteen days apart — in 376 days, yielded 902 lbs. of butter.

The last and most important yearly test is that of Landseer's Fancy 2876. She is now, for the amount of butter and richness of milk, the champion cow of the world; her year's test began January 26, 1885, when past twelve years old, and completed January 25, 1886, making a record of 111 lbs. 15 $\frac{1}{2}$ oz. in 30 days, 206 lbs. 9 oz. in 60 days, 302 lbs. 15 oz. for 90 days, and 936 lbs 14 $\frac{3}{4}$ oz. for the year. The ratio of milk to butter in her official test was 5 7-11 lbs. to one, or 2 $\frac{5}{8}$ quarts of milk made 1 lb. of butter, and on the 338th day of her test, when 4 $\frac{1}{2}$ months in calf, she made a pound of butter from *three and one-half pints* of milk! Verily! is this not a breed of creamers? and yet Landseer's Fancy is not an exceptional case for extraordinary richness of milk; among others, there are eight that required less than six pints of milk to a pound of butter; ten others which made a pound from eight pints of milk; twelve that required less than nine pints, and twenty that made a pound of butter from less than ten pints of milk.

The few instances enumerated, of large butter yields, are not exceptional cases.

The Jersey, as a breed, has become noted as the great butter producer by the large number of authentic tests, and, large as the list is, it falls far short of giving the little cow her just dues; many of our best cows passed beyond the age of usefulness before the practice of testing came into



Imported Guernsey "BONNIE LASSIE OF FERNWOOD," A. G. C. C.,
No. 1485 — Owned by G. E. GORDON, Koshkonong, Wis.

vogue, and many were, and are injured before they reached full maturity.

Of the yearly records of the twelve great Jersey cows, the average is $645\frac{2}{3}$ lbs. of butter. The highest (already referred to) was that of Landseer's Fancy, 936 lbs. $14\frac{3}{4}$ oz. at 13 years of age; the youngest, Cora, was 580 lbs., at 2 years of age.

We have 18 cows, with 30 day tests, ranging from 111 lbs. $15\frac{1}{2}$ oz. to 64 lbs. $6\frac{1}{2}$ oz.

Of weekly tests of cows that have made 30 lbs. or over we have:

Princess 2nd, with a record of.....	46 lbs. $12\frac{1}{4}$ oz.
Oxford Kate.....	39 lbs. 12 oz.
Mary Anne of St. L.....	36 lbs. $12\frac{3}{4}$ oz.
Alice Jones.....	31 lbs. $13\frac{3}{4}$ oz.
Ethleel 2d.....	30 lbs. 15 oz.
Iusie of Riverside.....	30 lbs. $5\frac{1}{4}$ oz.
Ida of St. L.....	30 lbs. $2\frac{1}{4}$ oz.

Of the group yielding 25 lbs. and under 30 lbs., we have 15; of the 24-lb. cows, we have 6; of the 23-lb., we have 12; of the 22-lb., 16; of the 21-lb., 21; of the 20-lb., 30; of the 19-lb. group, we have 42; of the 18-lb. group, 60; of the 17-lb. group, there are 100; of the 16-lb. group, we have 182; of the 15 lb. group, there are 237, and of the 14-lb. group, 379 tested cows. How many untested Jersey cows are there that can exceed 14 lbs. of butter in seven days? Probably more than a thousand in America.

Many of these large yields were made without any grain feed, while others received only a small ration.

Nibbette, under my personal supervision, six weeks after dropping her calf, with only $12\frac{1}{2}$ cents worth of feed per day made over 14 pounds per week; five months after calving she was still yielding 12 pounds 4 oz. per week; at eight months she yielded 10 pounds, and when only sixty days due to calve she was still giving a pound per day on grass only, at the Wisconsin Experiment Station, showing that with only ordinary dairy feed her annual yield exceeded 550 pounds. Her dam, Nibbie, gave 14 pounds 15 ounces six months after dropping her calf, the test being conducted at the Experiment Station.

So numerous have been the evidences of her superiority

as a dairy cow, that it seems useless to further enlarge upon her merits in this direction, as I think they are generally recognized by intelligent and fair-minded persons. The only objection that is raised by these is, that the grade steers are not profitable for beef. I am satisfied from my own observation and experience that this objection is more a relic of prejudice than from results of actual experience. I am not here to advocate the merits of the Jersey for production of beef, for I do not consider the thoroughbred Jersey a desirable beef animal as compared with the Short-horn, Hereford or Angus — fortunately, she is not built that way — but I do contend that a grade Jersey steer is a better “beef” than is generally admitted; and I also believe that he is a more profitable feeder, because of his superior digestion, enabling him to return a larger amount of beef for the food consumed and of a better quality than will the native. I am aware, that such an assertion without authentic data upon which to base it, is not accepted as good authority. So few of my neighbors have bred their cows to my thoroughbred sires, that my observation as to the merits of the Jersey steer have been almost entirely restricted to calves dropped by native cows, sold by me while in calf — yet there are a few in the neighborhood — and as a practical demonstration of their merits, I will cite the shipment of two car loads of steers made this fall. I happened to be at Cottage Grove station when they arrived at the stock yards. In the better lot of the two, there was a three year old Jersey grade with twenty others of same age, all raised together and having had similar care and feed. At my request they were weighed with the following result:

Weight of Jersey.....	1,525
2 natives.....	2,885
2 natives.....	2,720
2 natives.....	2,775
2 natives.....	2,675
2 natives.....	2,450
3 natives.....	3,385
2 natives.....	2,385
1 native.....	1,050
4 natives.....	4,252
	<hr/>
Average weight of twenty natives was.....	1,225
Weight of Jersey.....	1,525

The weight of the Jersey exceeded the weight of any one of the natives and exceeded their average weight by 300 lbs.

At \$12 per head, the price they sold for in the market, they brought \$228 less for the car load than they would have realized had they all weighed as much as the Jersey grade. A short time ago there were sold in this city by the same person seven head of two year old steers, among which there was one grade Jersey. The six natives averaged 1,043, while the Jersey, same age, weighed 1,180, being 137 pounds more than the average weight of the six natives. From the foregoing remarks, and indeed the experience of all Jersey breeders, it seems not unreasonable to claim that the Jersey is the best *dairy* breed; that she is an economical feeder, giving a larger return for the food consumed than any other breed, and that the grade Jersey steer is at least equal to the native for beef. Our native or scrubs, as they are sometimes called, are not profitable for the production of beef, neither are they so for the dairy; hence it becomes necessary in order to secure profitable results to infuse the blood of some of the full blood or thoroughbred breeds; and the question that confronts every farmer is, what kind of a sire shall I use? The fact that our native cattle have not been bred for any specific purpose—making them neither good dairy or beef cattle, and yet having good constitutions, make them available material from which to produce good cattle for either by the use of sires bred for a specific purpose. But when we consider the fact that even under the most favorable conditions, it costs about four cents per pound to grow beef upon our farms, and that it is not unusual for the market price to fall even below this figure, it is certainly not very encouraging to breed for beef.

But if we use a thoroughbred Jersey sire of a decided dairy strain, in a few years, a good dairy herd will take the place of the unprofitable native, and a yearly product of 250 to 300 lbs. of butter per cow from high grades will be realized under good management, and when we consider that the cost of producing a pound of butter is not much more than that of a pound of beef, and that the former will

bring five times as much in the market as the latter, the wisdom of breeding for the specific dairy cow becomes evident. What our farmers need then is more Jersey blood in their herds, and the cheapest way to secure it is to use thoroughbred Jersey sires from good cows of good family. Such an animal will do more good in the neighborhood of the purchaser than he has any idea of; he may have doubts and be skeptical for a couple or three years, but all doubts will vanish by the time he milks his three-year-old grade Jersey heifers. I am speaking from actual experience. I first used natives, then used a Short-horn sire from a "milk-ing family," on good native cows. The heifers were fine to look upon, but most of them were inferior to their dams as dairy cows. A magnifying glass would have been a great convenience in finding their udders. I then used an inbred Jersey sire, good individually, and from a good butter family. The result was simply wonderful; all had uniformly large udders and teats with first calf, and made more butter and gave more milk as two-year-olds, than their dams did when four years of age. Farmers are making a great mistake in allowing themselves to be prejudiced against the Jerseys on account of their size. Western and Canadian bred Jerseys compare favorably in size with natives, and many are larger than the average native. From my experience and observation I am satisfied that Jerseys earn more dollars for the money invested and food consumed, than any other breed. And is it not the dollar that the dairyman is after?

THE COMING FARMER.

BY REV. M. G. TODD, LODI.

Mr. President and Members of the Wisconsin Agricultural Society:—'Tis wise, at times, to look back over the past, to see by what steps we have reached the present; and then, by the aid of the past, in the light of the present, predict what is to be in the coming future.

We have only to go back a century, to reach the condition of darkness, when agriculture was so enveloped in ignorance, that no light of science could shine through its darkness. From that period, the farther we go back in the history of the race, the more degraded is the soil tiller, till we reach the darkness of the early shadows of the world, and are lost in the haze of superstition.

But we will go back only one century, that will give sufficient scope for the imagination, and food for study. It is a self-evident and acknowledged truth, that the products of the soil are the foundations of individual and national wealth.

And yet, how little this truth has been studied till quite recently. Farmers, as a class, a hundred years ago, were ignorant men. They had no science to apply to husbandry. They trod in the steps of their fathers, not dreaming that improvement was a possibility. The son copied after the sire, using the same implements in the same manner, and whoever did suggest an improvement was frowned upon as a visionary dreamer.

No associated thought or effort in farming was known; unless it was at a raising or logging bee, when feats of muscular prowess crowned the heroes of the occasion.

The farm implements of those times were correspondingly crude and unwieldy — in fact they were, until within a half century. Every farmer must have a plow, of course, a clumsy, unwieldy thing with a wrought iron share, and a wooden mold-board. Then there was the harrow, in the form of the letter A, with wooden teeth, a wrought iron spade, hoe, hand rake, scythe, sickle, and the wooden fork, with a few other equally clumsy implements completed the paraphernalia of out-door farming.

At that time all seeds were sown by hand, all grain cut with a hand sickle, and threshed with a flail by hand, separated from the chaff by the wind or a fan-shaped wicker basket. The grass was all cut by hand, and gathered with rake and fork. Seeders, cultivators, threshers and fanning mills, had never known an existence till within the memory of some present to-day.

But in process of time, farmers began to think, and as they did, improvements as by magic, sprang into being, the great heart of agriculture began to throb, the drudgery of the farm thrilled with live impulses; and although the process seems to us slow, as we look back it is wonderfully miraculous. It seems to bring out a law of progress and development, linking the past to the present, the present to the future, and all to the adjustments and ordering of infinite wisdom.

In this light, agriculture has laid the foundations of all that is useful, beautiful or inspiring, and points to the mountain heights of loftier attainments.

Before this upmoving in soil culture, we had colleges, universities, and other institutions of learning, that raised a few to the highest pinnacle of intellectual culture, but the farmer was the same serf, dogged and fettered in the same tread-mill, no bright halo lightening his drudgery.

The plow, drawn by mules or oxen, was an improvement on the root with which they still scratch the soil in India; and it is only about one hundred years since the first cast iron plow was patented in the United States. Since then, what wonders have been achieved in the line of cultivating the soils, and to what grand results they point.

It is interesting to follow the history of the plow, the first implement for stirring the soil; marking a steady advance, from the root used by the Indian, — then the cast-iron plow in all its varied forms to the steel plow, and then the sulky-plow, on which the farmer now rides, and while the soil is turned over at an even depth, and uniformity of style, — the plowman can enjoy his thoughts, singing or studying the great questions of agricultural science.

The improvements in the plow are only a sample of what has been witnessed in all other departments of agriculture. We ride to plow, ride to cultivate, ride to reap and bind the grain, and ride for pleasure, behind the best blooded stock, the fleetest steppers the country affords.

This thought gives us a glimpse of what the coming farmer is to be. Agriculture is prophetic of its own grandeur, and what in process of time it is to accomplish.

If it is the foundation on which all other industries and avocations hang,—and if rejected by so many builders, it is yet to be “the head of the corner,” over-arching all else.

Farmers of Wisconsin, you already occupy a commanding position. The free schools, free press, debating clubs, and farmers’ institutes, are all highly favorable for your growth, culture and development.

It has been claimed, and the claims set forth by argument, based on physiological law, that there was antagonism between intellectual culture and physical, or manual labor.

How often it was set forth that great scholarship was attained only at the expense of the physical, and that manual labor, that hardened and toughened the muscular organism, deadened the nerves, thickened the brain, forming a complete bar to anything like scholarly attainments. Times have been when this was practically true, when the student thought it necessary to “*consume the midnight oil*,” study eighteen hours out of the twenty-four. Such a course would unfit the student for all manual toil.

On the other hand, the farmers’ sons, or the farmer himself, who rises at 4 o’clock in the morning, does his chores, eats a hearty breakfast, then labors from twelve to fifteen hours per day at the most vigorous farm toil, year in and year out, will very soon be led to think that there is nothing in farming conducive to literary or intellectual labor or culture. Under such circumstances, the farmer’s son who left the farm for the college or university, however strong his physical frame, was called a “greeny,” till he thought all farmers “*were greenies*.” Here came this idea of antagonisms between the professions. But this condition of things is passing away. Not every soil tiller is entitled to the worthy appellation of farmer.

If farming requires vigorous physical labor, it is not necessary to carry it to exhaustion. If we are to “eat bread in the sweat of the face,” it is not necessary to sweat profusely all the time, or to sweat all the juice out of us.

Neither is it necessary for the student to study till his mind sparkles and glitters with the brightest gems of scholarly attainment; if, in so doing he has debilitated and enfeebled

his physical powers, till he has more the appearance of a walking *dish rag*, than a man thoroughly equipped for the battle of life.

If scholarship belittles or breaks down the manhood, give us the *manhood* without the scholarship. But we say it does not. There is a point where these heretofore extremes meet as co-helpers, co-workers. That point is where the intellectual culture stimulates, quickens and strengthens all the faculties that make agricultural pursuits a success. On the other hand, manual labor, when wisely planned, and judiciously performed, will give energy and thoroughness to the intellectual faculties, rounding up a complete symmetrical manhood. No, there is no antagonism between farming and scholarship; in the coming future they are to walk side by side, hand in hand, like loving sisters.

In this new order, we shall not look for, ask, or see, any twelve hours labor or study in a day,—but study enough to make the hand cunning, the brain always clear, the head level, and the man a plumb with all greatness.

Thus, the hand and the brain, like the two wings of the bird, will enable agriculture to rise, and soar to the highest summits of splendor, where she is ultimately to reign queen of the earth.

From four to six hours of wisely directed labor, and the same of study, per day, will in a few years, make nearly all farmers "wealthy and wise." The projectors of the "Industrial School System," caught a glimpse of this truth, but they had not wisdom enough to so marry Mr. Industry and Miss Scholarship, but that they both wanted to be master of the house, and manage all its concerns, in their own way. Now, I do not stand before you, claiming that I possess the wisdom to institute and manage such a school as I have hinted at,—no, I have no such school to found, I ask for no professorship in such a school, and have no friend to recommend. You scholarly farmers can fix that, to meet your own practical ideas. Something in this line, is sure to come sometime; whether it will be modeled after our agricultural annex, to the State University, of which Prof. Henry is the worthy representative; whether the course of

study shall be two years, or six, or ten, that you can arrange, making it the grand luminary of agriculture the world over.

Is then not here discernable the natural relation, between the mind and the body; and the lack of their natural culture? Are they not like the two wings of the bird? Has not the agricultural toiler, and also the student, been fluttering with only one wing. Nature does not permit success in this way; she says, educate, beautify and adorn, the whole man, round him up into that perfect symmetry that man was originally designed for. Farming is still in its infancy — long has it been creeping towards the state of manhood, and of late years its developments have been rapid, and its promises cheering.

These remarks apply to all the members of the farmers' families. Not alone the head of the farm, but the head of the home, the wife, mother and daughters, as well as the father and sons. In times past, it has been the same struggle in doors and out, on the farm. The sons anxious to get into the city and become rich, and live without work, and the girls to get away from the drudgery, by either teaching or marrying a man able to support them without labor.

But a better time is coming. Work is no longer degrading — it is to be honorable by the *honor* the husbandman puts into it. Improvements touch the life and labor of agriculture at every angle. It is now, less sweating labor, but larger returns.

It is more thought, more leisure, broader culture, adding grace and practical adornments to all the phases of husbandry. This will come when the head and the hand of the farmer are equally skilled and trained — when this co-education shall embrace the sons and daughters, bringing the strength of the sons, and the delicacy of the daughters, to produce the largest results and beautify the farm and the home, in the most artistic manner. Then the farm will not be tilled for utility alone, but for the beauty and joy it ministers, which are far greater than utility. Our soil is rich and generous, ready to respond with her treasures,

when her sons and daughters are faithful, doing their part with glad fidelity.

Look back once more to the infancy of agriculture, away down in southern Asia, and these, the thousands of years of struggle — *tribes, hunters, herdsmen*, destitute of civilization — serfs of the lowest order, and yet gradually rising under all these unfavorable conditions, to childhood, to youth, and here in the richness of the nineteenth century, it is reaching towards manhood, prophetic of what she is destined to be.

There are many errors yet to correct, before the "Coming Farmer," will stand forth in all the dignity of professional manhood. A few years since, a cultured lady, matron in our insane hospital here at Mendota, said to me: "There are more farmers' wives inmates there than of any other class of people in our state." I thought the statement overdrawn if not untrue. But in looking over the reports of our insane hospitals I found it true. You cultured farmers of Wisconsin — this is a sad commentary upon our noblest of all professions. Look to the cause, remove it at once. Drive out from the farm home the grinding toil and care that leads to insanity — bring in the art, music and mental culture, make the farm home a center of good cheer, where the professors and students of this school to which we have referred, shall meet to discuss all the questions pertaining to science in the home and on the farm.

I do not expect that the farm is to be immediately an *Eden*, the farmer a *Solon*, or all farm homes *palaces*. No; but the coming farmer is one who is to grow in wisdom, making the farm, if small, cozy, cheery, inviting, by its orderly arrangements, its wonderful productions, its pure bred stock, and the *home* filled with art, gladdened with music — a place where all the true graces and virtues of life are cultured. Where the elegant and eloquent in story, song and life will stand in dramatic order and beauty, pointing to the loftiest summits of attainment. Inspiration even now seems to have touched the soil and the soul — and the Coming Farmer, with his wife, sons and daughters, all equal partners and sharers in the thought, joy and labor of

the farm, from which will come teachers, ministers, lawyers, orators, statesmen and judges, clothed with dignity and honor.

Bright shines the star of Hope for the Wisconsin Farmer. *O, ye free, glad people*, who love and own the soil you cultivate, who know your duty, and knowing will perform it — stand in your places, be true to the Badger State, drive out all that is false and wrong, bring in all that is good and pure.

Then, with heads filled with practical thought, enriched by the wisdom of the world, your hands and homes filled with all that adds comfort or convenience — richly adorned with all the graces and virtues of Christian life, the Coming Farmer will sing:

“The world grows sweet as the centuries meet,
For Faith and Hope will sing;
Their voices soar, while the tempests roar:
The *Farm* we'll crown our *King*.”

THE PERCHERON HORSE.

BY S. D. THOMPSON, SECRETARY AMERICAN PERCHERON HORSE BREEDERS' ASSOCIATION, WAYNE, ILL.

Practically, the question of breeding horses presents three leading aspects to the farmer of the Mississippi Valley: 1st, what sort of a horse is best adapted to his use? 2d, what sort of a horse is best to sell? 3d, having decided what type of horse is best suited to his purpose, whatever that may be, how can he breed such horses with the greatest degree of certainty? We might enlarge these divisions of the subject so as to include questions of feeding, training and general management, which of course, are practical questions, but the three first mentioned are the principal ones, and even these may be summed up in the general question; what sort of a horse is it most profitable for the average farmer of the Mississippi Valley to raise? |

If the object of the breeder is to produce horses especially adapted to the carriage, I cannot too strongly recommend a

French Coach stallion, provided always that the mares are of good size. The trouble is, that few of our miscellaneous bred mares, that have more or less foreign draft blood, are large enough to produce good carriage or farm horses from such sires. The same remark applies to the thoroughbred and trotting sires. However, the farmer, by breeding to that class of horses will with care in the selection of sires and dams, produce a few stylish and high-stepping good sized horses that will command a good price as carriage horses. The best horses of this class will always sell readily, and frequently bring very high prices, but with the greatest care in selection and breeding that the average farmer will be able to give, he will find a large proportion of the horses produced from such a course of breeding, too small, or else lacking in style, to fill the requirements of a first-class carriage horse; and he will find an accumulation of unsaleable horses on his hands.

But it is certain that very few farmers can afford to breed two classes of horses, one to use, and another to sell, and practically, the farmer will find it most profitable to raise horses, that while they will do the work of the farm well, can at any time be sold at a remunerative price. In other words, he should direct his breeding into the channel that will produce the greatest proportion of saleable horses; for after, all, that must be the chief consideration. And here he will do well to remember that the demand is constantly for heavier horses than the market affords.

The demand for greater size is apparent in the horses that are used in all the great cities, by the omnibus, baggage and express wagons, the heavy truck and the dray, and there is absolutely no demand for small horses unless the possessors of extraordinary speed. No matter how many of such horses a farmer may have on hand, nor how cheap he may offer them, he cannot find purchasers. On the contrary, the farmer who has the good judgment to raise horses weighing from 1,200 to 1,600 lbs., of fair average quality, has no difficulty in finding a market.

This fact ought to teach an impressive and practical lesson. The general farmer cannot afford to breed for speed.

He must leave that to gentlemen of means, who, with the choicest brood mares, as well as sires, and with every appliance for successful training, can engage in the lottery of breeding for speed, because he can afford to take the chances, and because he finds a considerable portion of his reward in the relaxation from other cares, which this business affords. But the general farmer must raise horses that he can sell. He must do the work of the farm mainly with mares, that, while performing their labor satisfactorily, will each year produce colts, which at four or five years old will be saleable horses. He must keep such brood mares as when coupled with good stallions, will invariably produce horses that answer the demands of commerce.

There ought to be no practical difficulty in doing this. If the mares be quite large enough with a dash of good blood, they may be coupled with a well-bred, large Coach horse, with a considerable degree of certainty that the produce will be good coach or carriage horses.

But, as a general rule, the farmers of the Mississippi Valley with their miscellaneous bred mares, will be most successful if they confine their breeding to draft horses. With good Percheron horses for draft sires, 75 per cent. of the foal from ordinary mares will make horses that in fair flesh will weigh 1,400 pounds or over, at maturity; and such horses, unless seriously defective, will always sell at good prices.

There is no expense for training; the colts are broken by the farmers in doing the farm work, and as soon as they are old enough are ready for the market, and such horses can be raised as cheaply as a steer to the same age.

It will cost a little more at the outset for the service of the stallion, because good, imported horses, such as I have described, cannot ordinarily be bought for less than \$2,000, and such stallions cannot be kept at less than \$20 service fee.

But this small additional outlay is scarcely worth taking into account, when it makes all the difference there is between a colt that will sell as a four-year old for \$150 more, and one that can not be sold at all.

That the Percheron is to be preferred to the draft horses

of Northern Europe, there cannot be a doubt. The infusion of warm blood, through their Oriental origin, gives them the courage and staying powers of thoroughbreds, while the very consanguinity of their breeding for the past century, has so thoroughly intensified the good qualities inherited from their Arab ancestry, that they are more potent as sires than any other draft breed.

Of all the heavy breeds, the Percheron is the nearest to the blooded in shape and qualities. In addition to these qualities, he possesses a size and vigor that does not degenerate.

I cannot too strongly urge upon the average farmer the necessity of breeding his mares to a good draft stallion if he would produce good, saleable colts; and it is my firm conviction that better results can be obtained from Percheron sires than any other.

The produce will not only have size, bone and muscle, but what is just as essential, will preserve the style, spirit and action of the thoroughbred.

Since the first introduction of Percheron horses into this country, a radical change has taken place in the minds of the people. At that date, horses of 1,500 or 1,600 lbs. were considered too large for the use of the country, and a large proportion of the people believed that only the most disastrous results would be obtained by the use of such horses as a cross upon our ordinary stock.

Time, however, dispelled this illusion, and when it was thoroughly demonstrated by actual practice that the crosses were very superior animals and sold readily in the market at a much higher price than any ever produced in the country for work purposes, the prejudice gradually disappeared, and many people who had been opposed to so violent a cross, began to argue, that, "if the results of medium sized animals were so good, we will increase the size and produce better results by the using of still larger ones;" and from their first introduction, there has been a yearly increasing mania for larger and larger horses, until there has grown a demand for the very largest that can be found.

As a result, Americans have traversed all parts of Europe

seeking the very largest animals, irrespective of breed, sacrificing every other quality to size alone. The deleterious effect of this unfortunate course upon the horse stock of the country will be measured largely by the length of time this practice continues.

At present there is very little indication of a change. Avoirdupois establishes the value with very many of the purchasers, and is a weakness that is eagerly seized upon by the importer and seller, as by it, breeding, quality, harmony of action, proportion and all the essential elements of a good horse, are overlooked and disregarded; and an inferior bred and cheap horse in the country where he was raised, will sell here, if he is only large, for as high a price as the finest bred and most valuable animal of his kind to many people who do not know or do not care as long as the people will use them.

The bitter experience of those who make that mistake will doubtless exercise a wholesome influence, and it is to be hoped that the time is not far distant when the essential elements of value, symmetry of form, perfection of action, constitutional vigor, and a prepotency inherited from the finest lineage [transferred through generations of the best blood of the kind] — will be recognized by all who desire to purchase stallions with a view to the improvement of the stock of the country.

It is unquestionably true, that the largest animals have not proven the most valuable sires, from the fact doubtless, that being abnormal in size they are themselves accidental results, and therefore must necessarily only occasionally or accidentally reproduce themselves.

The medium and normal size is the safest, as in reproducing himself, or any of his ancestors [they being nearly alike in size], it gives a certainty of uniformity only to be obtained by individuals who are the likeness of their prototype for generations.

In order to successfully select animals of the greatest value for breeding purposes, it is necessary to have a correct knowledge not only of the breeding or ancestry of the animal, but also the processes of rearing them for generations;

for it is by their inherent qualities and educated habits that their future usefulness as breeders is assured.

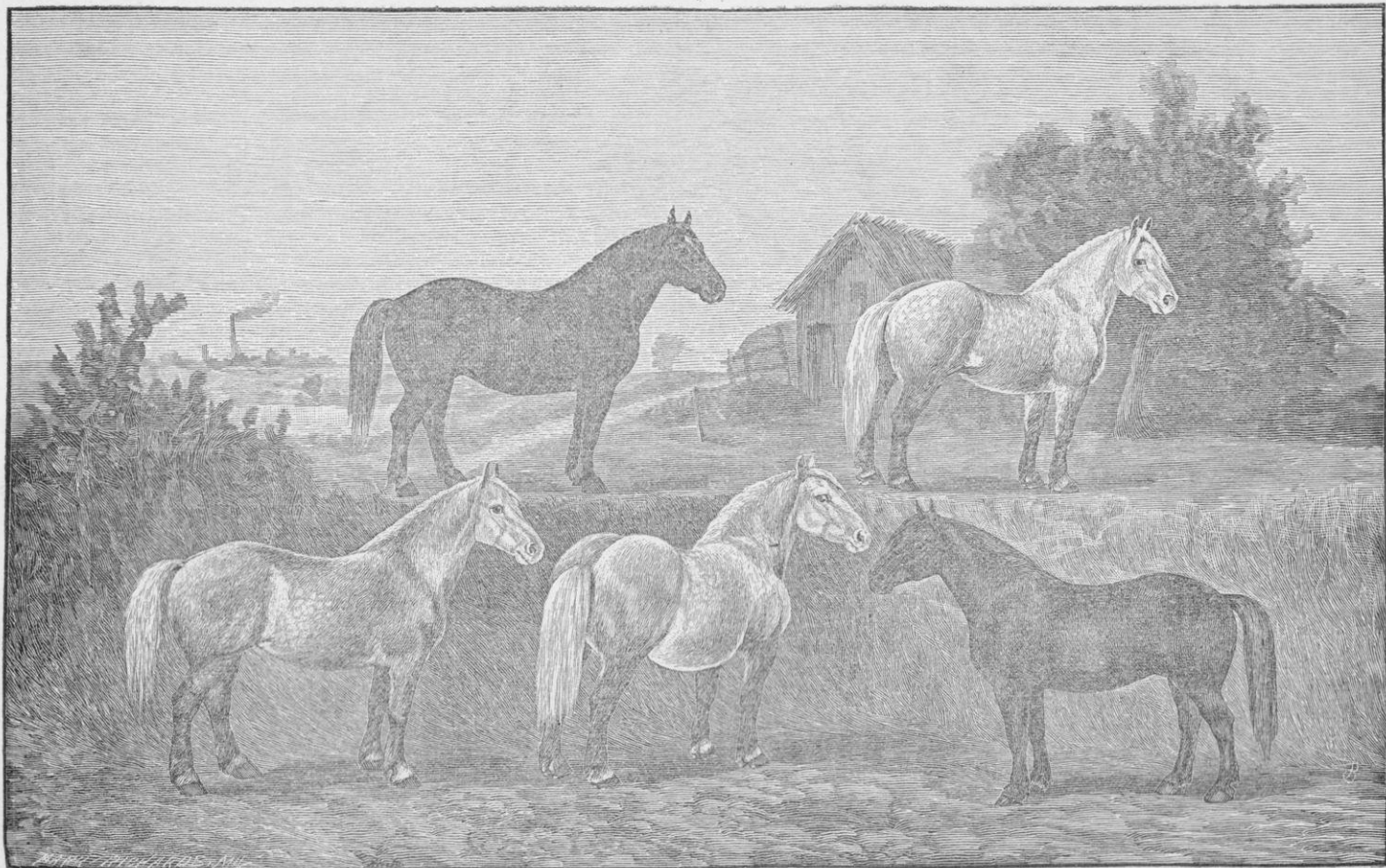
Thus, in selecting horses for the saddle, it is indispensable to secure those descended from a race that instinctively possesses the gaits most sought after in individuals used for that purpose. You can then, with a degree of certainty, expect that the produce of such animals will readily adapt themselves to the desired gaits, as they belong naturally to the family from, which they are descended.

So also, in selecting a stallion for breeding horses for the race course, we would think it folly to recognize any other than the purest thoroughbred as worthy of our attention. In selecting a sire for breeding trotting horses, we use the same judgment and discretion, recognizing individual merit in the ancestry and instinctive capabilities in the individual as of the utmost importance.

In other words, he must be descended, through both sire and dam, from animals that trot naturally themselves, and have proven their capabilities by their performance. This practice is a rule among all intelligent men in selecting horses for the services mentioned; but when it comes to the selection of animals for the production of valuable workers, our people seem to forget all the ordinary precautions they consider necessary in selecting animals for other purposes, and simply breed from horses that happen to be in their vicinity, or whose style attracts them, regardless and absolutely thoughtless of any other valuable qualification.

To state it plainly, the work horses of this country have been bred at random. Until within the last few years, very little thought or attention has been given to or money used in the improvement of the heavier class of work horses in United States, and even at the present time, when the mania for large horses has seized upon everybody, it is doubtful if one man in a hundred ever asks the question, whether the animal he breeds from is inherently possessed of the valuable qualities necessary to make good work horses in himself, or by hereditary transmission.

In no country but France, that I am aware of, is any particular attention given to this subject. The French recog-



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nize the fact that in order to produce hardy, vigorous enduring and willing workers, it is just as necessary for them to be for generations the descendants of both sires and dams that are individually trained to the work their progeny will be called upon to perform, thus developing their physical powers, and by constant use acquiring those habits of labor and that docility of temper that gradually become instinctive powers, and develop into hereditary and transmissible forces.

The gentleness and docility, as well as the vigor and hardihood of the animals produced from the first cross of Percheron sires upon our native stock, and the readiness with which they adapt themselves to work, with scarcely any education or training, convince us of the fact of a prepotency in French blood more powerful than that of any other large breed known to us.

From these convincing facts we are forced to the conclusion that one of the great reasons why Percherons have been more successful in this country in the production of uniformly vigorous, docile and active horses, perfectly suited to the wants of our people, is that they have been bred for ages, accustomed to severe labor and vigorous exercise, under constant control, until they have become natural instinctive workers themselves, and possess the prepotent power of transmitting all their qualities to their progeny, who are born with the natural aptitude for work possessed by their sires. These facts are worthy the careful attention of our breeders, whose practices have been so entirely different.

It is a well known fact, that in all countries where large horses are raised, except in France, when an exceedingly fine colt is produced, which gives a promise of making a suitable breeding animal, it is given extra attention and care, in many cases being fed considerable grain before being weaned. And at weaning time it is carefully tied in a stall, kept in a state of inactivity [or at best put in a loose box] and is reared to maturity by a forcing system, with an entirely inadequate amount of exercise necessary to develop the natural physical qualities of the animal.

When arrived at sufficient age for breeding purposes, this same course of inactivity is continued, as the custom of the countries is against the working of large stallion, and if allowed to work and do the drudgery of the farm, they would lose caste and be called old work-horses, and thereby lose the patronage of the public which makes them valuable to their owners.

This system of idleness is universally followed in all countries except France, and has had a very disastrous effect, as by inactivity, the horse loses, to a great extent, his powers of endurance [or rather fails to develop them]; and at the same time, idleness and isolation from all animals of his kind, induces moroseness and irritability of temper, which increases with age.

When used as a sire, the animal reproduces in his progeny, the qualities, that by this mismanagement have been developed in him; and the continuation of this process, generation after generation, has produced in our large breeds, a lack of physical quality, and that viciousness of temper which has greatly detracted from that popularity among the American people.

And it was not until the introduction of the Percherons — a race, as we have before stated, educated from the earliest periods to hard work — that our people could be made to believe in the superiority of a large sized horse over a small one for the general work of the country.

I therefore say to you, gentlemen, that if you desire to preserve the valuable qualities of the Percheron race, free from degeneration, feed the colts you keep for breeding purposes well, but do not pamper them. Give them abundance of exercise. Pasture them if possible, as there is no food like the natural food.

If you cannot pasture them, give them a box stall as large as you can possibly afford, with plenty of light and pure air, and when they are old enough to work, work them, as it is by these means and these alone, that you can preserve in them, and make it possible to transmit to their progeny, those qualities which are so much sought after, and so necessary in the hard service demanded of horses in this country.

7:30 P. M., WEDNESDAY Evening.

Mr. True — I desire at this time to introduce this resolution: "Recognizing the material aid rendered this convention by the several railroads." —

Referred to the committee on resolutions.

OUR PRODIGALITY.

BY E. W. DWIGHT, BROOKLYN.

Mr. President, and Ladies and Gentlemen of the Convention: I feel perfectly at home in this convention. I shall talk some of the time and some of the time I shall read. I am a backwoodsman and I have earned my own living ever since I was fourteen years old. I have been a seaman from cabin boy clear through the whole thing; now I am a farmer and I shall talk like a farmer to brother farmers, and not undertake to put on any style.

I can prove my proposition right here to my satisfaction, when I look over this audience, that we, as farmers, are prodigal. Here is the county of Dane, nearly as large as Rhode Island, and this building ought to be filled with the citizens of Dane county. It is conceding the prodigality, in my opinion, that they are not here. Here is an institution for the bettering of farmers. Here are some of the best farmers in the state. And I might say I am especially sorry that there are so few young farmers here. We old fellows that came here, in an early day, have done our duty as well as we could. We have cleared away the forests as well as we could, built court houses, and jails, and school houses, and fences and everything of that character and we have behaved well, I think, and have done about all you could expect we should do. But that was in a formative period. We are now entering into the second stage and are endeavoring to farm better. And it seems to me that the most important thing for us to do is to cultivate a spirit of enthusiasm among the young men, and the old men as well, to do as well as we know how. Did you ever know a far-

mer that didn't acknowledge that he didn't farm as well as he might, or was as good a citizen as he might be? Never. Then with these conventions and institutes and everything of this character we should do all we can to stir up greater zeal and enthusiasm in our profession. If the farmer would avail himself of his opportunities he might be a cultivated man and the peer of any man. And this is the great defect in institutions of this character, there is no danger but what we shall improve our cattle and sheep, but the greatest and most important thing, after all, is to have thoroughbred men and thoroughbred women. We would not submit to the adulterations and frauds we have in the United States to-day if we were thoroughbreds; we would take them by the throat and squeeze the oleomargarine out of them. Stand up I say and insist on honesty and decency; for the farmer has suffered more from mis-rule than any man under the heavens; for sooner or later, we shall have to foot the bill. Now with these preliminary remarks I shall read a little. Now I had small advantages; I never went to school after I was fourteen years of age, and you must not expect anything very elegant, for if you do you won't get it. (Reads).

OUR PRODIGALITY.

Nature knows no wastes. The drop of dew which shines on the leaf of a plant may be consumed by an animal, enter into his system, form one of his component parts, only to return again to the air through its lungs or skin, and to there circulate as vapor and once more support vegetable life.

The carbonic acid gas which gives the sparkle to our glass of soda water on a hot summer day, may on another occasion be part of the food of our ripening corn, helping to form the starch and sugar which fatten our stock, they, in turn, to be eaten by man.

The ammonia and nitric acid found in our barnyard manures and spread upon our fields, help to make up the gluten which builds up our muscles; the wastes of which eventually return to the soil to once more feed our grain.

Nature, therefore, is never prodigal. It is man, alone, who is wasteful. Careless of time, as if he had several centuries in which to improve his mind and to do good to his fellow creatures instead of a few decades; improvident in his business, throwing away often as much as he consumes or utilizes; imprudent in his management of governmental affairs, expending large sums on unworthy projects, and neglecting to foster enterprises which will add to our national prosperity.

It would be impossible in the short space of time allotted for my paper to give you an exposition of the ways in which we are as a people extravagant. I shall therefore attempt to point out only a few of the most flagrant examples of our wastefulness, speaking especially of those which interest us most as farmers.

We are prodigal as individuals, in our business relations, in our family associations, and in the performance of our duties as citizens.

As individuals we are wasteful of our time. It is said that the floor of the gold working room in the U. S. mint at Philadelphia, is a network of wooden bars, made to catch all the falling particles of the precious metal. When the day's work is done, the floor, which is in sections, is removed, and the golden dust is swept up to be melted and coined; so if we would economize those leavings of time, those bits of hours, use them in gaining knowledge or doing good to others, at the end of life we should find ourselves wealthy in intellectual acquisitions and worthy deeds.

The young men in our farming communities need to have this fact particularly impressed upon them. If they would use a fraction of the time in the reading of some useful book, which they now give to lounging about our village stores, or a few of the winter evenings to the study of some agricultural topics, which they now spend in public dancing rooms, among low associates, they would find that this thrift of time would repay them with an "usury of profit" far beyond their most sanguine dreams.

To all then, and particularly to the young, I would say:

Do not be too prodigal of your time. Utilize everything.

“Think naught a trifle, though it small appear,
Small sands the mountain, moments make the year,
And trifles life.”

Still although I would advise the young men and women to economize their time; yet I would not ask them to do so, to the extent of injuring themselves physically. Many farmers do not take enough recreation. Many a man grows old and bent before his time, works fifteen hours out of the twenty-four trying to add a few more acres to his farm, or to build a better house than his neighbor. Many a woman, too, loses all of her youthful beauty before she is thirty. The never ending routine of washing, ironing, scrubbing, cooking and patching, without vacations, takes the color from her face and the sparkle from her eye while she is yet young, and she perhaps “goes to her long rest and the mourners go about the streets,” when she should be alive and happy, and caring for her little ones. So I would say to the young farmer, although there is much that ought to be learned in this world, and it is hard now-a-days to acquire a competency: Don't be too wasteful of your health, for it is a God-given gift and may never return to you, especially be careful, in this respect of the wife and mother, for she is the one you have promised to care for and cherish: above all the guide and instructor of your children; and once lost you can never find such another.

Remember this: that it requires much less mind to work incessantly than to work judiciously.

Now I have often thought how careful we are of the brood mare. She must not be over-worked, you know, oh no, she must be well groomed and fed and well taken care of. And yet, some of these men in the State of Wisconsin that I am acquainted with, some of them I know of, worth even twenty thousand dollars, and yet their children are not warmly clad to go to school. What do you think of such things as that? What must a farmer think of himself that will do such things? I have known of that in more instances than one. I have known them to take a child out

of school for every little thing. If there is any tobacco to be stripped, if the pigs are to be driven to market, if a horse is sick or anything of that kind a child is kept out of school, often not going more than two or three times a week. I live right across the road from a school house and I know what I am talking about, for I have watched things a good deal. Our girls go from seven to ten months in the year and are becoming very intelligent, as you will find if you sit down to talk with one of them. They are teaching schools all through the country and they are vastly more intelligent than the boys and read more and attain more. This condition of things will tell. Forty years ago it was not so necessary; but if we are to have this scientific farming we are striving for, and succeed in these experiments in which we are groping around for scientific attainment, it is absolutely necessary that our boys should be better educated than we were. I do not want my boy to go through the hardship and endure what I have. I want a nobler and grander manhood and womanhood than we have or have had; I want to elevate the entire race of farmers so they shall be intelligent and cultivated and appear as well in society as any one.

What is education? It is discipline. Won't a disciplined soldier fight better than a raw recruit? What will improvement do in conflict with disciplined soldiers? So it becomes absolutely necessary in this day and age that the young men, if they are going to be farmers worthy of the name, should be better educated than we were. And what a glorious country is this. New resources are being gradually developed all the time, something new discovered. A great country requires great men; we ought to have heroes and heroines here in order to carry out and put on this full development. I believe this is about the greatest nation that ever existed. I am proud that I am a citizen of Wisconsin, and I am proud that I am a citizen of the United States. (Applause.)

Secondly, as farmers we are wasteful in our business relations.

One of the most marked ways in which we are improvi-

dent is that of running in debt. Through the abuse of credit system, we are tempted to buy many things we do not need and more often than we can afford, for this reason our expenses are apt to exceed our income, and before we are aware we are drawing upon our principal. Then let it be our care, not to be in any man's debt. We should resolve not to be poor, whatever we have, spend less. Poverty is a great foe to one's peace of mind. It destroys liberty and makes some virtues impracticable and others difficult.

It shows a want of thrift to spend more than one's income. Dicken's Micawber has expressed it tersely thus: "Annual income 20 pounds. Annual expenditure 19 pound, 19 shillings and 6d., result, happiness. Annual income 20 pounds, annual expenditure, 20 pounds and 6d., result, misery." And this is the world's wisdom upon the subject.

Then again we are as farmers wasteful, in that we do not manage our business more systematically. If merchants or real estate dealers conducted their affairs in as haphazard a manner, more names than now would be blotted annually from the business directory.

They alternately try dairying, raising of steers, sheep and hogs, and perhaps in the end abandon them all, without asking ourselves whether or not we are doing it in a profitable manner. An old and established firm in a city will gain a reputation for fair and honorable dealing and thus secure higher prices for their wares. We should show some of this business shrewdness, on the farm and establish a profitable market by always being able to sell good products. We also waste by the decay and exposure of machinery. In buying we are often imprudent. By seeking to obtain cheap articles we encourage adulterations and thus we have constantly thrown on the market sugar tinted with indigo, coffee mixed with chiccory, tea colored with Prussian blue, and one handed butter, the latter being a compound that we are forced to put in our mouth with one hand while we hold our nose with the other. Nothing can more fully illustrate the desire of the public for poor goods, than a visit to one of the 10 or 25 cent stores, in some of our large cities. Here you will find the cheapest and most tawdry articles,

spread out for sale, with placards telling of the great bargains, plastered all over them. These houses are thronged with customers a large proportion of them being farmers; while the purchasers do not number one half as many in stores filled with staple and reliable wares. It is the patronage of such establishments and manufactories that fills our country with shoddy stuff and gives so often goods that are hardly worth the handling.

We are as farmers often prodigal in our family associations; especially is this true in the education of our children. Our boys are kept from school as soon as they are large enough to be of any use to us. During the summer they harrow, pick potato bugs or herd cattle. In the winter season they may go for two or three months; but even then the slightest excuse prevents their attendance. The consequence is that they arrive at maturity with a small knowledge of the common branches and what is more to be deplored, with so little interest in education, that in after years they never attempt by general reading to increase their store of information.

Many of them as they become men find it difficult to add or subtract common fractions. Some of them could not say whether Thomas Jefferson signed the Declaration of Independence or issued the Emancipation Proclamation.

Their knowledge of geography is equally limited. One of them was heard to ask if Michigan were in Nebraska.

In farming communities the girls are generally better educated. The mother with a more self-sacrificing spirit keeps her girls in school during seven or eight months in the year. So that at eighteen or nineteen years of age they have a fair knowledge of reading, writing and arithmetic, obtain a certificate and go into teaching. These girls ultimately become the wives of the aforesaid boys. No doubt the men appreciate the superior knowledge of their help-mates, for I once heard one of them remark, shortly after his marriage, in speaking of the superior accomplishments of his bride: I had no idea she was so *smart* until, after I married her. Why sir, she can give you all of the names of the Presidents of the United States, in their order. Still

'though it is beautiful to occasionally see the "sturdy oak lean on the clinging vine;" yet, there should not be this vast difference in their educational acquirements.

4th. We are wasteful in the management of the affairs of the government.

During much of the last century it has been the policy of the nation to send abroad all of our surplus agricultural products. We have really exported our soil to Europe, deprived our country of its fertility. Of course we have been young and vigorous and have so far been able to withstand the drain; but the time will come when, from our impoverished land we may cry out like one of olden time: "The seed is rotten under their clods, the garners are laid desolate, the barns are broken down for the corn is withered. The beasts groan, the herds of the cattle are perplexed, because they have no pasture: yea, the flocks of sheep are made desolate."

Again, we are especially prodigal in regard to the destruction of our forests. Our trees are being consumed with amazing rapidity. It has been said that railroad companies have required, for ties, all of the available timber growing on an acre, equal to the states of Rhode Island and Connecticut, and that as ties need to be replaced as often as once in seven years, there would be taken annually for this purpose 565,714 acres; allowing that a growth of thirty years is necessary to produce trees, of proper dimensions for ties, it would require 16,971,420 acres of woodland to be held as a kind of railroad reserve to supply the annual demand of existing roads, to say nothing of the construction of new ones. More than this, our white pine will soon be a thing of the past, neither can wise government protection and timber culture atone for its loss. Still we could be reconciled to this great devastation of our woods were it all actually consumed for a wise purpose. But much of it has been willfully and recklessly burned. The mountains in Oregon and Washington Territory are hidden from sight for weeks and months, by the dense smoke from burning trees. It is significant that other nations are aware of our deplorable condition in regard to future forest supplies. In 1885, the

government of Bavaria sent an expert forester to the United States to study its timbers, who explained his mission in these words: "In fifty years you will have to import your timber, and as you will probably have a preference for American kinds, we shall now begin to grow them, in order to be able to send them to you at the proper time."

Lastly we are a government prodigal in regard to our shipping interests. This is a subject in which I am particularly interested, having spent the early part of life on the sea. Our nation has paid during the last ten years to foreign steamship companies for the carrying of exports and imports over \$1,500,000,000. This vast amount has been taken from the circulating medium of the country without any appreciable return. It has gone to swell the wealth of certain European states, while it has weakened a multitude of our industries. It has strengthened their navies, but has closed our marine workshops. It has increased the flow of their money, but contracted our currency. The question of reviving our ocean commerce ought to be a national issue. Our navy can not be built up unless we restore our mercantile marine.

The American government will not support great standing armies or navies, hence the necessity of a trained militia on the sea. As Admiral Porter said in his late address before the American Shipping League: "England when lately threatened by a war with a great nation, converted a dozen or more fast trans-atlantic steamships into vessels of war, and peace was soon assured;" hence the value to the United States of fostering private ship yards; for unless we pursue this policy we may sometime find ourselves in a position where it will be impossible to maintain the national honor. "In time of peace," I say, "prepare for war."

In the words of that gifted woman and artist I would say:

"A sacred burden is the life ye bear.
 Look on it, lift it, bear it solemnly
 Stand up and walk beneath it steadfastly.
 Fail not for sorrow, falter not for sin.
 But *onward, upward*; till the goal ye win."

(Applause.)

Mr. Corschaken — The gentleman's talk seems to hit right at the root of things; I would like to ask him, will you be so kind as to talk a little longer on that subject. (Applause and laughter.)

Mr. Dwight — I am afraid if I kept on, I might run into politics. (Laughter.) I guess that will do for a backwoodsman.

WOMAN'S INFLUENCE.

BY A FRIEND.

Long ago, a Brahmin legend tells us, a deep-eyed philosopher from the East set out at the mouth of the sacred Ganges and traveled up stream, his whole being enwrapped in one consuming thought. Wife, child, home and friends, all were cast aside as worthless baubles. He thrust all sweetness from his soul; the deep love of the past that he had gathered into his own broad spirit, all the love of his kind that had burned up so high and clear in his breast, till the poor and suffering hailed him as a demi-god, all this he cast to the winds, and with the glare of a madman in his eyes, though he was not mad, with his proud form bent low like a beggar's, scanning the shore, speaking to no one, seeing no one, except to fling the intruder from his path, he would have murdered his best beloved had they stood in his way, he went stooping through all the long shining hours. What was he doing? He was picking up pebbles, lightly striking each to the lump of lead his left hand held, while his right tossed the useless stone into the flood that it might clog his steps no more.

He was seeking the philosopher's stone, which his holy books hinted had been lost centuries ago by the banks of the rolling river. Gold? He despised it. But power he craved, and would have, were he to suffer an eternity of woe to secure the boon. Since gold ruled the world, with boundless wealth at his command, he would conquer that world, aye, though crushed and broken hearts lay under the Juggernaut

of his ambition. He would find that stone, he must find it, and every effort of mind and body was bent on the search.

So days lengthened into months, and months into years, and as he slowly rounded the fountain head and toiled down the right, while scorching suns burnt his brain and fierce storms pelted him and every thought and memory of love had been strangled within him, even impatience had no sway, such was the intensity of his greed, till one fatal day, as he stooped for a pebble whose unusual shape and color made his heart sick with a wild hope, lo! in his trembling left hand the dull lead flashed into yellow radiance under his dazzled eyes, while his right, grown treacherous through long habit, flung his long sought, his darling treasure into the flowing stream, and with the splash and glitter he knew his quest was ended. And how?

The legend does not tell us whether his heart broke under the cruel blow his own hand had dealt, or whether his soul, freed at last from its shackles, stood up stronger and braver than ever — only this, he had found his treasure, and had flung it from him.

It is a pretty old story, and I like to think it true; there is always a shred of truth in those old fables — a thread of gold as it were, binding them to the early days of our own simple, loving lives, when we, "blind to bright futurity, and untaught of the knowledge of the world," looked at life, its glinting shadows and mysterious depths — thro' the the mild beam of a mother's eye.

And now, looking at the old legend through the alchemistic sunshine of the nineteenth century we see that men and women are still seeking the Philosopher's Stone, for the desire of power is innate in the human heart; we all possess it, and often by mistaking its purpose, destroy its issue by misdirection.

But the dear old legend whispers more — that for woman there is a Philosopher's Stone a thousand times more precious, a thousand times more powerful, than ever Oriental greed had pictured it, within her very grasp. And it is no vulgar gift like that of the old time seeker — there is no risk now to the earnest and true. For woman's influence,

if she be really the woman, will never transmute the base, lowly, shattered things about her into aught but purest gold.

We will not here refer to Fashion's Butterfly, who on dainty tips of jewelled fingers counts her conquest even as the savage warrior, the scalps dangling from his war-belt, and boasts of her triumphs accordingly; whose greatest heart-ache is the misfit of gown or delay of milliner with promised bonnet; and who by her levity justifies the poet when he says:

"Ah, wasteful woman! she who may
On her sweet self set her own price,
Knowing he can not choose but pay —
How she has cheapened Paradise."

Nor yet of her, who loudly clamors for equal rights, co-education, universal suffrage, in all the newly coined phrases of the present age; forgetting that by nature she is fitted for a higher sphere, than any legislation or ballot-box can afford.

But of her, who reigns by right divine queen of home, crowned with triple diadem of mother, wife and sister, and who has proved to the world by her unswerving fidelity where her faith was pledged, that in love's sweet alchemy there is no dross.

The woman in whose presence hard hearts grow soft, heavy hearts grow light, sinful hearts cast off their burdens: at sight of whom little children smile, glad youth grows gladder, and weary old age, with grateful heart thanks Providence for the blessings which her hands bestow.

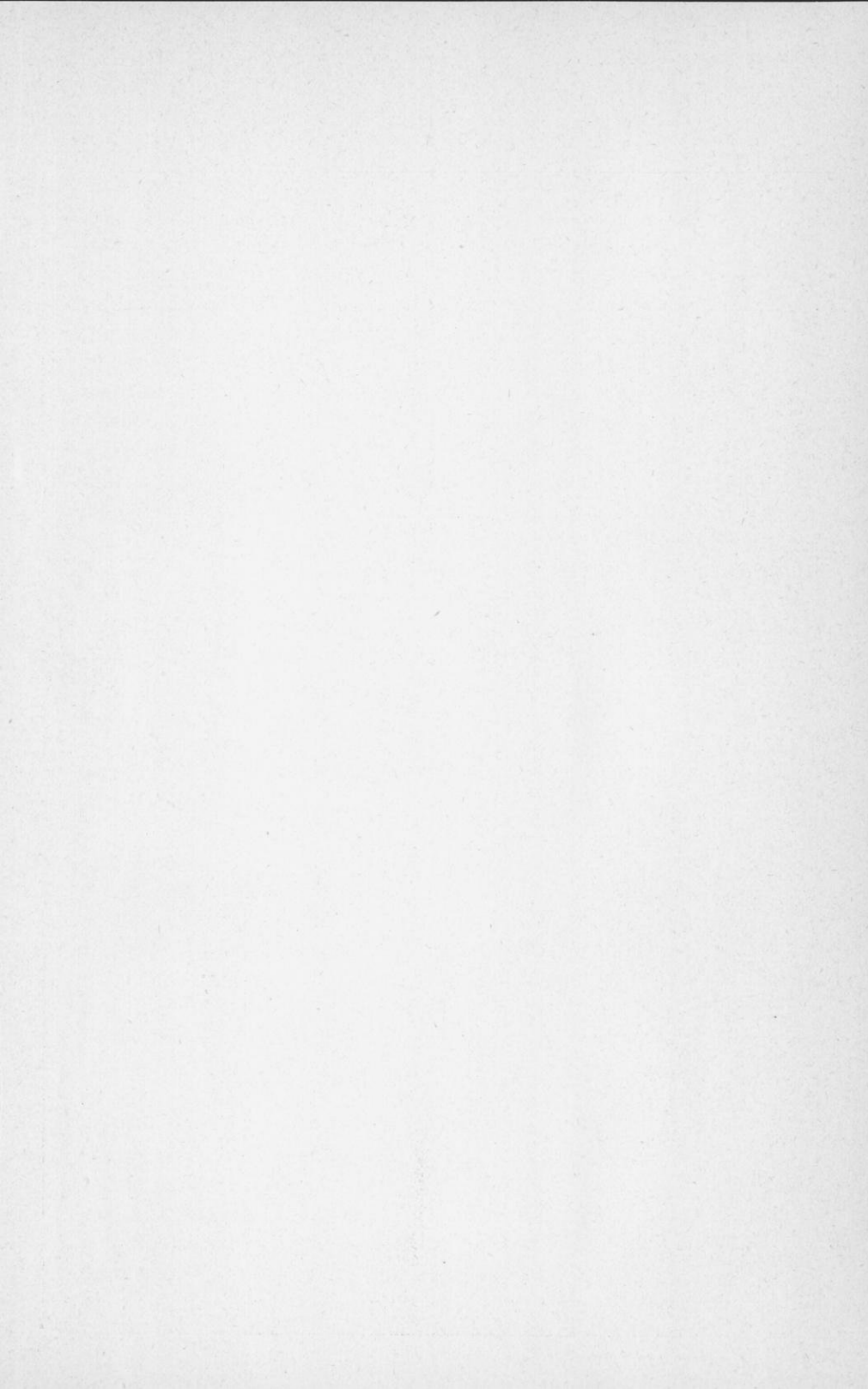
The woman who considers that her "true potency is to help," who beautifies the homely details of daily struggle and cherishes the tenderest pity and love for all the ills of human life, yes, and life lower than human, for she knows the same love created all — who throws a gleam of light on the path of the outcast, a kind word and cheery smile to the desponding; who if poor in all things else gives so generously of womanly sympathy that we would fain cherish the misery that prompts her bounty. The woman of whom it can be truly said: "Her dead cold hands hold naught save what

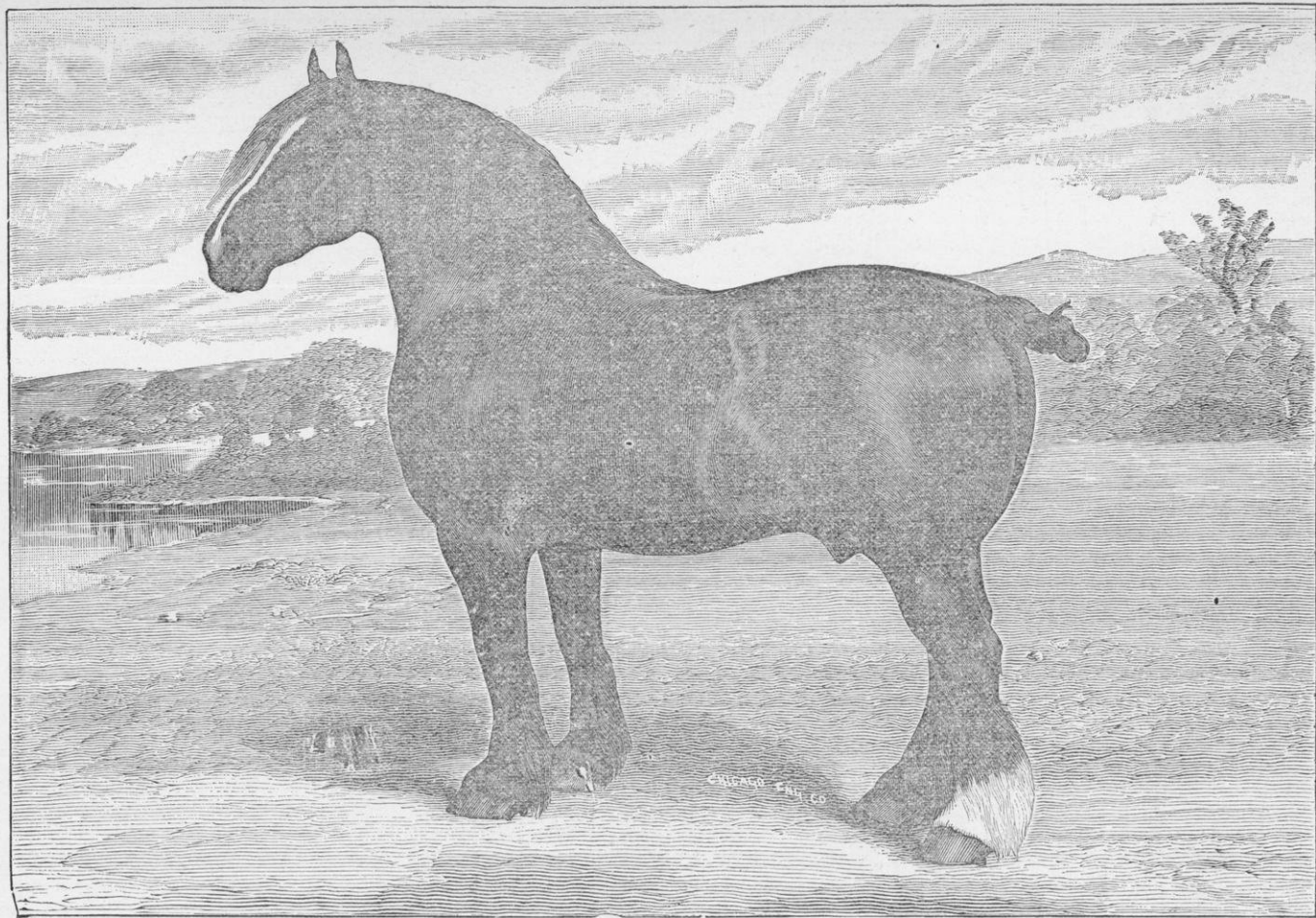
she gave away." Surely she is the woman, strong and valiant, who, when need is at hand, will prove the Esther or the Judith of the hour, whose spirit will live in the memory of others till time shall be no more. Hence my theme should be sung not written, for it is a poem, the most beautiful, the most tender, the most pure; for woman's influence, that strange, indescribable power she possesses, makes her pre-eminently sovereign of the most poetical thing in the world, the human heart. Ah, "these hearts of ours," these strangely passionate, wayward, childish hearts, what prosy poems some of them are after all. And yet what sublimities even the narrowest are capable of. What histories might be written of these worlds that we each and every one carry about us. These throbbing, tumultuous worlds! Never monarch of storied past swayed grander, never field of conquest, red though it were with the life blood of our best and bravest, beheld scenes of more glorious victory, or more appalling defeat, as those daily enacted in these worlds of human hearts. Tell me, my sister woman, what compensation does the world offer that could in the least degree supply the loss of even one of these divided kingdoms?

How charmingly and yet how seriously does Ruskin show the responsible influence of every individual woman her work of love — in producing happiness, scattering rays of sunshine, and preventing, yes, he says, preventing not only misery but crime. And allow me to state that this influence is all the more powerful for being indirect. Did you ever think of what a magnetism there is in a truly individual action? what a charm there is about reserve? And where is this reserve more charming or this magnetism more striking than in the character of a truly good and great woman? Noble, virtuous women are what the world needs to-day, for woman holds in her palm, the destinies of nations. She is the safeguard of society. For if knighthood is not to die, if chivalry is not to become a mere name, the admired term of a past age — who but true, noble, pure women can prevent its death? For to whom in the olden time was knightly truth sworn and who were the protectors of this sacred vow? Far be it from me to assert that knights "without

fear and without reproach," are wanting in our day — but who will question that there is power within the hearts of true women criminally reserved or foolishly appropriated, sufficient to make a nation of knights? What woman can deny that the desire of power has not stirred her heart, intellect or will — it is a part of our nature — this wish to rule, to be first. We have all seen one or more of those sweet-voiced, angel faced women, who are too timid to bear the approach of a bat, too tender to tread on a worm — but who are as hard as steel to the sister-woman who dares invade their chosen sphere. Just watch one of those gentle creatures, withering some one with a look, which plainly says, "What brings you here?" Is it any wonder that the recipient shrinks back or is crowded out of the place she might have filled? The generous woman would have seen that there was work for both and room for both, and united effort would have produced a result adding greatly to the success of each. But woman's influence became for the while ambition's slave, and could not afford to be generous. Ah, how many lives prove failures for lack of this wee bit of breathing room — Oh what a pity that we do not use our gift more royally — why not put our base metal and clay to the test of the Philosopher's Stone till it has changed it into gold seven times refined.

There is so much room, there is so much need for the right use of this regal inheritance that a woman's loving heart must find it out; if she but trim her lamp aright and hold it high with patient watchfulness; if she but bring to her aid the beautiful apostolate of kindness. For kindness adds sweetness to everything. It has done more for the welfare of man than either zeal, eloquence or learning; and these three have never done anything to alleviate human ills unless they were kind. We all of us need encouragement to do good. The path of life even when it is not up hill, is rough and stony, and each day's journey is a little longer than our strength admits of, only we have no means of shortening it. How many high motives, grand ideas for good, have fallen to the ground, which a bright look or a kind eye would have propped up. How often the mere tone





"SCOTSMAN" — Owned by GEORGE KLEIN, Ft. Atkinson, Wis.

of the voice, the mere fixing of the eye has conveyed sympathy to some poor downcast heart and instantly the spirit revives, under that single peep of human sunshine, and is encouraged to do bravely the very work which in despondency it had resolved to leave undone.

Oh, that woman realized how broad and dark are the shadows cast by her sometimes low aims, faulty tastes, narrow prejudices and little meannesses. The time is past when the smile of a Helen may cause a siege of Troy, or the beauty of Cleopatra destroy an Anthony. Yet the power to do a greater evil still remains with woman, if she be unmindful of her Christian calling—unmindful that her words and actions to be fair must bear the impress of a mind and heart purified by daily self-denial and patience under the trials that may await her in whatever position however exalted or lowly she may be placed.

Oh, my Sisters! Let us awake to the needs of the hour; and by becoming more womanly ourselves help our sister women rise to the height God meant for her when she was created, not slave, not inferior, but as helpmate to man.

THE DAIRY IN WISCONSIN.

BY H. C. ADAMS, MADISON.

Mr. President and Gentlemen of the Convention:—I regret very much that the gentleman who was to talk on a sweeter subject ("Honey"), is not here. I do not like to talk on this question this evening; it is too abrupt a change, it seems to me, from "Woman's Influence" to the the cow, for an evening session. We generally take up other questions, educational or social at the evening sessions of farmers' meetings. I do not know that I shall be able to say anything more appropriate at this time upon this subject than the Boston reporter did, that Mark Train tells about. Twain says he had heard a good deal about the old masters, and he thought he would go over to Europe and get acquainted with a few of them. He said when he got over there he found that they were all dead, but they had left a few of

their paintings around in the cathedrals, etc., in Europe, and he looked them over and was very much interested in them; and he said one day he was traveling about gazing on the walls of a picture gallery, and he found there Turner's picture of the "Slave Ship," to him an awful conception, a picture that was lurid with the colors of yellow and red. He said while he was looking at it a Boston reporter came along, stuck his hands in his pockets and looked up at the picture for a minute and said, "By George, that looks to me like a tortoise shell cat having a fit in a platter of tomatoes." (Laughter.) I don't know as I shall be able to do this thing tonight, in any better shape. But, at the same time, I will talk to you on the subject for a few minutes, saying in the first place that I am going to give you a few figures for I know if there is anything a farmer is hungry for, it is figures, and I would not disappoint anybody for anything. I introduce these figures for the purpose of comparison, to show whether the dairy interests of Wisconsin are of any more importance than they were twenty-seven years ago or not.

I find that in 1860 there were 203,001 cows in Wisconsin. I wish to say that the one cow was a general purpose cow, and was owned up in Dane County by my father. (Laughter.) She was milked by a general purpose boy, and I was that boy; and my general purpose was to dodge the job of milking her if I could. (Renewed laughter.) The balance of those cows were scattered over central, southern and eastern Wisconsin. They produced 13,611, 328 pounds of butter, and 1,104,300 pounds of cheese. Reducing the cheese to a butter basis, we have the butter production of that year equal to 14,163,478 pounds, an average per cow of 69 pounds. Ten years later the number of cows had reached 308,307, producing 22,473,036 pounds of butter, and 1,591,798 pounds of cheese. Reducing the cheese again to a butter basis, we have a total butter production of 23,268,945 pounds, — an average per cow of 75 pounds, a gain in the average of six pounds per cow in ten years.

In 1880 the number of cows had reached 478,374, producing thirty-three million pounds of butter in round numbers, and seventeen million pounds of cheese which is equivalent

to six million pounds of butter. Adding these together, we have a total of 38,353,045, an average per cow of 82 pounds. In the ten years from 1870 to 1880, we had only increased the average seven pounds per cow.

In 1887, as you will find by a reference to this dairy map, we had 595,922 cows, producing 43,513,550 pounds of butter, 42,353,000 pounds of cheese, all equivalent to 64,690,472 pounds of butter,—an average per cow of 108 pounds of butter. We have made in the last seven years more than twice the advance in the average production of our dairies that was made in the precedings twenty years.

Now, as to the magnitude of this interest in Wisconsin today. Our revenue from butter and cheese is about ten millions of dollars. The skim milk from which that butter has come is worth three millions of dollars. The increase of our dairies in calves is a value of fifteen hundred thousand dollars, the milk used in families is worth twenty-five hundred thousand dollars; and the manure product of the 600,000 cows of the state, taking its value as given by men like Professor Stewart of New York, and Miles of Michigan, is six millions of dollars, giving us a total dairy product of Wisconsin in 1887 of twenty-three millions of dollars. This is more than twice as much as the total hog product of the state; it is more than twice as much as the value of the wheat grown in the state; it is more than twice as much as the value of the hay product, and more than twice as much as the value of the corn product.

It not only had a great financial value, in the directions I have indicated, to the state, but this industry has another value which it is worth while to refer to, and that is this: It has opened up a line of business which has enabled us to develop to the highest extent that portion of our farming population that are adapted to the dairy business. In almost every farmer's family there is one boy that has a liking for that kind of business; and the opportunity he has had during the last ten years for following his natural bent and doing a thing he likes, has enabled us to get from our farming population the greatest production.

We are told by Professor Roberts, of Cornell University,

that when a farmer sells two-hundred dollars worth of wheat at eighty cents a bushel, he is selling from his farm fifty dollars worth of its fertility. That is, in order to make his land as good as it was before he raised that wheat, he would have to spend fifty dollars for commercial fertilizers to bring it back to the point where it was before he raised the crop. Now, if that thing is true, we have sold in Wisconsin since 1860, not less than two hundred and fifty millions bushels of wheat and sent it out of the state; and those two hundred and fifty million bushels of wheat were worth two hundred million dollars; and if the statement of Professor Roberts is true, we have robbed Wisconsin farms in the wheat crop alone, or we have sent out of the state, at least fifty million dollars worth of their fertility. Along back in '65 and '70, after that process, the farms of Wisconsin were all blanketed with mortgages, and the productiveness of the land had been carried off in the crops of small grain. But the business of raising stock, the business of dairying came in, and through its agency we not only retained all the fertility which we then had, but by blanketing those fields with grass, and saving the richness which comes down to us from the atmosphere and in the rain, by covering the land up so the chemical changes, which develop plant food, would go on we have brought back this state to a higher condition of fertility than existed here ten years ago.

Now, what are the conditions under which the dairyman in Wisconsin are working to-day? In the first place, as far as soil is concerned, we have just as good soil as there is on the broad earth anywhere for the production of the best dairy product. There was an idea held down in New York about twenty years ago, that they couldn't make a first class article of cheese or butter except in certain dairy districts of New York. But that idea has been exploded. Wisconsin cheese and butter have taken premiums in competition with cheese and butter from all sections of the earth.

As to the matter of transportation, of course, living at the west, we are at quite a distance from the dairy markets, from New York, Boston, New Orleans, Philadelphia; but

transportation rates are so low that it don't cost us more than two cents or two and a half cents a pound to send it to the farthest market in the limits of the United States; and the western farmer, keeping his cows upon land that only cost him twenty to thirty or forty dollars an acre, feeding his stock hay which only costs him from five to twelve dollars a ton, feeding his cows corn which only costs him twelve to twenty dollars a ton can make his butter and compete with the eastern dairyman who has to make his butter upon land which cost him from fifty to one hundred dollars an acre, and feed his cows hay that cost him from twelve to twenty dollars a ton, and feeding them corn that cost him from fifteen to thirty dollars a ton. So there is a certain advantage in making butter here in this state of Wisconsin.

But there is another thing we have to consider, and that is the matter of climate. We have to feed those cows six months in the stable. We have to feed against six months of cold. We have to keep our cows in such condition, or feed them such food that they can fight the cold which comes in in these blizzards which we suffer from here in the state of Wisconsin, and of course it costs us a little more, on account of the severity and the length of our winters, to make our butter and our cheese. But the farmer who will adopt the modern method of dairying, who will house his cows as he ought to house them, has no need to suffer seriously in this respect.

Now I wish to say a few words about certain technical details in the dairy, with reference to that one matter of keeping our cows in the winter. Perhaps in our farmers' conventions we are apt to generalize too much; and I want to say this: the thing for the farmer to do here in Wisconsin who wants to make money, is to put his cow in a barn just as comfortable as he can make it, and keep her there as long as it is not comfortable for her to go outside. Don't worry about the question of exercise. It is not a burning question here in Wisconsin. The dairy cow don't need much exercise. It is a mistaken notion that many of our farmers hold, that a dairy cow, in order to be healthy,

must go out doors and hump her back to meet the exigencies of the weather, and skip round in the shade of the barb-wire fence in order to get constitutional vigor. (Laughter.) They have an idea that a dairy cow must be hardened; that is a mistake. They tell us, "If you keep them shut up you are getting an artificial creature there." The cow is an artificial creature anyway; she is artificial the minute you stop the calf milking her, and go at it yourself. I tell you, gentlemen, the more artificial we make the cow, the more productive she is. So put her in a barn where she will be comfortable. It is different with a steer; in a steer you want development of muscle; you want meat there. You don't want meat in a cow at all, that is not what you are after; you are after milk. Her business is simply to eat food, digest it, and make it into milk. We find by practical experience, that if we take our cows and put them in the stanchions and keep them there two or three weeks, if the weather is severe, that we get the best results out of those cows, but there are any number of farmers that don't believe it. They say, "If we do that sort of thing it don't give them any exercise, they can't get fresh air, and all that sort of thing, they are going to become weakened, and will run out in the course of time." But I wish to call the attention of those gentlemen to the fact that over in Holland, where the Holstein cattle are produced — cattle by the way which have more constitutional vigor than any other cattle on the face of the earth, they have Dutch women who have more sense in the dairy business than many men have here in Wisconsin. They take those cows and put them in a barn and keep them there from fall till spring, and they don't seem to suffer much. So put your cows in the barn and keep them comfortable.

Now there is another thing that the Wisconsin farmer must do in order to get the best results possible out of his dairy, and that is, to give his cows warm water. You can't afford not to do it. It is attention to these little things which makes a man successful in his business. What would you think of a merchant who permitted his clerk to drop a ten cent piece here, a five cent piece there, and a penny somewhere

else, and permit the boys round the store to leak pennies all the while? Yet there are any number of farmers in this state of Wisconsin who are permitting leaks in every direction from their dairy barn,—leaks by permitting their cows to stand out in the cold, and then feeding them costly corn to keep them warm; leaks by cooling them off with ice water, and then giving them corn to warm that ice water up to the temperature of the animals. The temperature of a cow is about 101° ; and when she takes ice water at a temperature of 33° , or 40° or 45° , the first thing to be done is to warm that water up. Of course, in order to warm it up heat is required; and in order to get it, we have to have feed, oats and corn meal, and food of different kinds, which gives us the heat necessary to warm it up to that temperature. There is another thing. It not only takes heat but it takes vital energy; and the production of milk is a process which involves vital energy. You weaken that energy, and the capacity of the cow to produce milk is diminished. So as a matter of economy in the vital energy of the cow; and as a matter of economy in the feeding processes of the man who owns her, we ought to warm that water for her.

What has been the result of this method of treatment? We are told by Professor Roberts, of Cornell University, that warming the water, at a very low expense, saved him fourteen per cent. of the food which he gave to his dairy cow. We are told down in Kansas, by Professor Shelton, that it saved twelve per cent. of the food to warm the water for his cows. John Boyd, of Chicago, tells us that it has increased his milk flow twenty-five per cent. to warm his water up to blood heat; and I know in my own experience, which has run over a period of about eight years, it has increased my milk flow at least twenty-five per cent., and increased the production of cream at least twenty per cent. And not only that, but a cow will not drink all she needs when the water is extremely cold, and she will suffer in her digestive processes because she don't do it. Now, the first winter I gave my cows warm water they shed their coats along in February, and they came out in May as slick and smooth and looked as nicely as they do ordinarily in the latter part of June.

The large quantities of water which they drank seemed to wash out all the channels of their circulation, and kept them healthy and vigorous and thrifty.

Now there is another question, with reference to summer feeding — a question that comes before every meeting of dairymen, almost — “Does it pay to give our cows green feed in the summer?” I want to say that it appears to me that it depends entirely upon circumstances. If you have an abundance of good pasturage it will not pay. But you have no business to have an abundant amount of pasture; if you are an active, thinking and progressive dairyman, as you ought to be, you will have more cows than your pasture can possibly carry; and then, with the addition of green food and some grain you can increase your butter production and diminish its cost per pound. And not only that, but when you are feeding grain, as Professor Henry told you this morning, you are, by a very cheap process, manuring your farm. He probably told you this morning that when you pay twelve dollars a ton for bran to feed a cow, you not only get the value out of it for the purpose of milk production, but you also get an equal value in manure. Stock your pastures up to their fullest capacity; then buy a little more stock, and put in plenty of fodder corn, buy bran, and so enrich your soil.

There is one other thing that every dairyman ought to do, and that is to raise corn forage for summer feeding. Professor Arnold, who is a high dairy authority in the United States, says he believes it to be true that there is thirty per cent. of loss to the men who are keeping dairy cows in the United States, because they don't keep up the milk flow during the summer months. We have plenty of grass in May and June, and along the first part of July; and then the cows begin to shrink and keep on shrinking, the weather grows warm and the pastures dry, and the cows shrink down to about one-half of their original yield of milk, and it then becomes almost an utter impossibility to bring them back; and the dairy suffers through all the remaining months of the year, simply because the dairyman has not been wise enough to prepare himself with green

need to keep that milk flow steady. Now that can be done at a very little expense. I found last summer in my own experience, that with one single acre of southern ensilage corn, planted three feet apart, six inches in the row, I fed twenty-four cows eighteen days. That ration only cost me about two cents a head a day per cow; and while I was feeding a single acre my cows produced milk enough and cream enough to make about \$120 worth of butter. So you can see what economy there is in preparing yourself for the exigencies of the summer as well as those of the winter.

There is another thing to be considered besides feeding. Wisconsin dairymen, who would make money, must have, in the first place, ambition. There is no kind of business in which a man is any use who has not some ambition to get on. I find this thing among the farmers of the state—not perhaps a very large percentage, but I find a certain sentiment among them that in order to be loyal to their fathers they must follow their practices. Then they keep in a rut in which they are already half buried, and year after year they sink deeper into the rut, and so lose most of the sunlight that is overhead. We don't want that kind of men. We want men whose ambition leads up, not down. We want something different from the smartness of the negro at Fort Donaldson. The darkey was in the employ of a federal officer; and after the battle was over the officer began hunting around for his servant, and could not find him. Finally he jumped up on a log and began to call him, and he heard a sort of a response somewhere; he could not make out hardly where it was, but at last he discovered that it was under his feet; the darkey had got into the hollow log and hid there. "Come out of that," said the officer. "Can't do it, massa." "But you've got to." "Oh," he says, "dere's four white men men behind me got to come out first." As they came out, one by one, making their excuses, the darkey says: "Massa, dat's the first time I ever got ahead of a white man, and it will be the last." (Laughter.)

We want not only ambition, but we want persistence, capacity to hang on, and a capacity and determination to grasp the new truth and that new light which has come into the

dairy business, and we want to begin to understand what the men who are thinking on this subject are trying to teach us; we want to begin to understand what a dairy cow is; we want to understand that the ideal dairy cow is the animal which, from a given amount of food, will produce the most milk or butter. We don't accept the opinion which has been prevalent in this state for many years, that the good dairy cow is the animal which looks nice and smooth and round, and gives us the typical beef form.

Now, how are we to know a dairy cow when we see her? In the first place to be a model cow, she must have small horns. She must have prominent eyes indicating intelligence and nervous energy. There should be a good distance from the center line between her eyes and the top of her head; the eyes should not be near together; they should be so prominent that the face should be dishing. She should have a small neck; we haven't any use for a large amount of meat in the neck of a dairy cow; the more you have the more pounds of food it takes to sustain it; and you want a thin shoulder; and Mr. Hoard tells us you want a prominent back bone, indicating great nervous power. Then you want long, deep, sloping ribs, and you want large milk veins, and above all things, you want a good udder. There is no single thing by which you can tell a good dairy cow when you see her; but the nearest approach to it is a good udder. Unless there is a receptacle for holding a large amount of milk, the cow can never be a model cow; and, as I said before, the milk veins which supply the blood to the udder should be large, so there may be an ample supply of material out of which to make the milk. You want a thin flank and a small face; and, if there is any other feature which comes next in importance to the udder it is a thin, rich, mellow hide.

I saw it stated the other day by J. H. Monrad, of Chicago, that of the ninety-four million pounds of butter brought into the Chicago market, only seventeen per cent was first class, forty-three per cent. was medium, and forty per cent. was poor. The produce in Wisconsin is about forty-five million pounds of butter, and only eight million pounds of

that butter is sold for a first class price. The other thirty-seven millions is sold for nine cents per pound less than it should be sold for if it were made as it should be made. The Wisconsin farmer then pays a tax upon his bad method, or upon his bad stock, equal to nine cents a pound for thirty-seven million pounds which is over three millions of dollars. We come here to the farmers' convention, and we grumble about the taxes we pay to the state; we grumble about the taxes which some of us think we pay on account of the tariff, but which we probably don't pay; and we don't spend much time as a rule in talking about the taxes which we pay ourselves on account of our ignorance and bad methods.

It seems to me that we can profitably look these things in the face, and since this thing is true,—that the average cow in Wisconsin only produces 125 pounds of butter, and as long as the best dairy cows in Wisconsin produce 250 to 350 pounds of butter each as long as the average butter product of the state is sold for less than fifteen cents per pound, and as long as the best butter product of the state, made at less labor than the poorer product, is sold at an average of twenty-three cents per pound,—we have a right, and it is our business and duty to indict ourselves of stupidity, to a certain extent, because these things are.

Now, gentlemen, I have taken up some time on this question, and I would be glad if we could follow this up with a practical discussion about the details of the dairy business; I am willing to answer any questions that I can answer; and I only hope that you won't be as hard on me as the little girl was who stopped her father one morning as he was going to his place of business, and said, "Papa, I want to ask you a question." "Well," he said, "I can't stop now; I am in a great hurry." She says, hold on, Papa, I want to ask two questions." "Well, go on." "Papa, how did Christ perform his miracles, and what is condensed milk made of?" (Laughter.) I thank you, gentlemen, for your attention. (Applause.)

DISCUSSION.

Mr. Chandler—Several gentlemen round here in my vicinity would like to have Mr. Adams tell us, if he can, how much of this increase in the dairy business in the product of the cow in these later years, which has been so great, has come from the improved methods in the farmer's houses, and how much is attributable to the organized dairy business.

Mr. Adams—That is a pertinent question, and of course it is one that I am unable to answer definitely; but it is undoubtedly true that the organization of creameries and cheese factories have played a very important part in the increase of averages which I submitted in the statement made. You can see that years ago we were only making one million pounds of cheese, and that was made in farm dairies; that has changed. By the record of a year ago we are now making forty-three million pounds; and that cheese is nearly all, if not wholly, made in factories. There has been a very great gain in the quality and quantity of our butter on account of the introduction of blooded stock of a specific dairy breed; because we are beginning to find out that we can make more butter, and better butter, by what is called the deep-setting process in milk, which has come into use during the last six or eight years among the dairymen in Wisconsin.

Mr. Thorpe—I would like to ask Mr. Adams if he keeps a yearly record of the amount of milk he gets from his cows.

Mr. Adams—I would say to the gentleman that I kept a record of the amount of cream the last year I was in the business; I sold the sweet cream. I know what my cows will average for the year in butter. They averaged 276 pounds per cow the last year I was in business.

Mr. Thorpe—I have been keeping a record for the last ten months. I have a little dairy of ordinary cows, I haven't got any thoroughbreds or anything of that kind. Ten cows for ten months, up to the first of this month, have averaged me 229 pounds of butter each. I was wondering if, in the two more months I have to go, I could get up as high as

Mr. Adams, but I don't think I can. Two of my cows are two-year-old heifers.

In a late speech that Mr. Adams made at Beaver Dam at an institute a year ago, he said that the old brindle cow must go. He finished up a real nice little speech, the same as he always makes, by saying that, that the old brindle cow must go. I say she must not go; and I will tell you why: my wife owns that old brindle cow. (Applause and laughter.) And if that old brindle cow goes, I have got to go. (Renewed laughter.) When I was married my father had two grade Jerseys on his place,—little bits of things, you know, and he gave one to me and one to my wife, but he gave her the choice, and she took the brindle cow—it was then a two year old. Well, mine was the prettiest looking cow, but she had a bad habit of picking locks; one night she got away, and the next morning she was in the butcher shop. He cut her up, you know, and sold her for mutton; he couldn't sell her for beef, she wasn't large enough. (Laughter.) But now I would like to read you the record from the family of that old brindle cow.

I have got a two year old that gave 4,890½ pounds of milk in ten months. Assuming that the milk in this herd is all alike,—for though some is better than others, it all averages alike for the ten cows,—the milk from her would be equal to 195 pounds of butter from that two year old. Its sire was a thoroughbred Jersey, and its dam was that old brindle cow. (Laughter.)

I have another one, five years old. Her record for ten months is 6,593 pounds of milk. She is fresh milk now, and she gives about 22 pounds. Her butter record would be 263 pounds. Her sire was a thoroughbred scrub (laughter and applause), and her dam was that old brindle cow. (Renewed laughter.)

I have got one more that I want to read; she is six years old. Her record in ten months is 8,677 pounds of milk—347 pounds of butter. Her sire was a thoroughbred scrub, and her dam was that old brindle cow. (Laughter.)

I will give you the record of the old brindle cow, herself, next. She is eleven years old. Her record for ten months

is 6,996 pounds of milk, 278 pounds of butter. I don't stop to give fractions.

Then I have a three year old with a record of 6,506 pounds of milk, and 224 pounds of butter; her sire was a grade Jersey and her grandam was that old brindle cow. I have still another, a two year old; her record is 4,406 pounds of milk, and 176 pounds of butter. Her sire was a thoroughbred Jersey, as good as there was in the neighborhood,— because I owned him — (applause) and her grandam was the old brindle cow. (Laughter.)

Now I find I have a total amount of milk from ten cows for ten months ending February 1st, 1888, of 59,449½ pounds of milk, or a total amount of butter of 2,299½ pounds — and some of that from the old brindle cow. (Laughter.)

Let me next give you the amount of milk each month, and the amount of milk to the pound of butter each month. The total amount of milk for April was 7,211 pounds, and the butter was 277 — 27 pounds of milk for one of butter in round numbers. Total for May, 8,895 pounds of milk, 323 pounds of butter, or 27 pounds of milk to one of butter, without the fractions. The total for June was 7,921 pounds of milk and 300 pounds of butter, or 26 pounds of milk for one of butter. For July it was 6,496 pounds of milk, and 240 pounds of butter, or 27 pounds of milk for one of butter. The milk was getting thinner. In August it was 6,372 pounds of milk, and 237 pounds of butter, or 27 pounds of milk for one of butter. In September it was 6,264 of milk and 233 of butter, or 26 pounds of milk for one of butter. Here is October with 5,856 pounds of milk and 197 pounds of butter, or 29 pounds of milk for one of butter. Let me tell you why it took so much that month. It was because my ice was gone and the weather was pretty warm, and I could not get the cream. Anyone who has kept ice and tried it, will know. In November the weather began to get cooler, and it was 3,194 pounds of milk, and 107 pounds of butter, or 27 pounds of milk to one of butter. In December it was 3,393 pounds of milk and 171 pounds of butter, or 19 pounds of milk and a fraction over for a pound of butter. In January, 3,222 pounds of milk, and 151½ of butter, or 21

pounds of milk to a pound of butter, or an average of 5,944 pounds of milk per cow, or 229 9-10 pounds of butter for each cow.

I have two months longer to milk those cows and I calculate to keep the record right through, and shall probably let it be known how much I get.

Now I didn't calculate to get up here and tell what my cows have done, but I came here with some boys from Burnett, and they said if I would get up here and talk a few minutes they would pay my expenses. (Applause and laughter.)

Mr. Beach — May I ask how you fed your cows this winter, and how you are feeding them now.

Mr. Thorpe — I feed them all they will eat, and I am feeding them good corn stalks and hay, mixed clover and timothy, and I am feeding the full milkers on an average five pounds of wheat shorts a day, and there is some corn; the corn stalks are like the Dutchman's oat straw. He never fed his horses anything but oat straw, and that wasn't half threshed; and that is the way I feed my cows.

A member — How do you set your milk?

Mr. Thorpe — I set it in the deep setting system.

Mr. Beach — I think the boys have done well in offering to pay him his expenses; I think the money is well invested. Such statements as he has made here are of great value. If he is not in the right track now, he is in the way of it. And if more would keep that kind of a record they would be better dairymen, and better farmers. One thing he has taught us is that sometimes a cow that hasn't got any favorite blood in her is worth keeping. I favor blood as much as any man; but before butchering a cow that has no record, she ought to be tried as this man has tried them, to know what she can do. I am glad for one that he has given us these records. I consider it the most important paper we have had here in this convention since I have been here. (Applause.)

Mr. Adams — I would like to ask the gentleman if he saw any other scrub cows that were as good as old brindle.

Mr. Thorpe — I don't think I did; no, sir; but I don't want to let the old brindle go yet.

Mr. Beech — Yes, sir; I have.

Mr. Adams — If you were going to take your chances, you would not ordinarily take a scrub cow for a butter cow, would you, if you had your pick?

Mr. Thorpe — No, I don't think I would.

Mr. Adams — Now, the drift of the gentleman's statement, while it is clear and valuable, the drift is in favor of the scrub cow with the thoroughbred treatment, isn't it?

Mr. Thorpe — I didn't say she was a scrub; I said that the old brindle was a grade Jersey; that is what I said. I said that the sire of the two heifers was a thoroughbred scrub; that is what I said.

Mr. Adams — The fact that the old brindle had Jersey blood in her explains something that I could not understand.

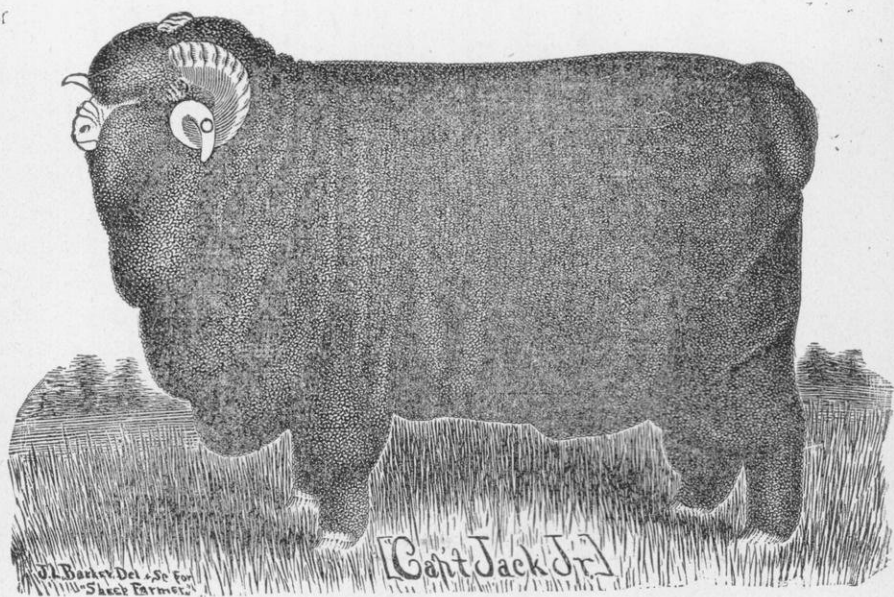
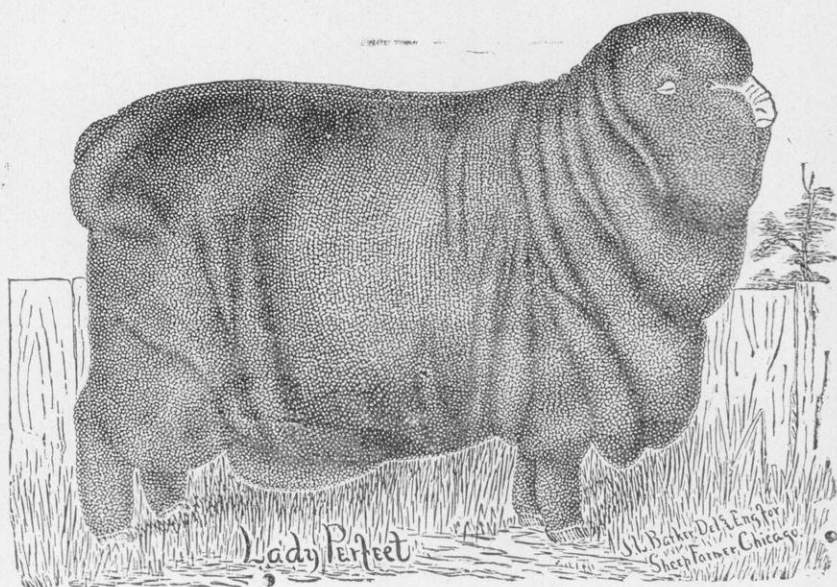
Mr. Goodrich — The old brindle cow makes me think of my black horse. And I move that this gentleman be requested to give us the result of the full year's experiment, that it be published with the record of this society.

Mr. Adams — I second the motion, if it is necessary to make such a motion.

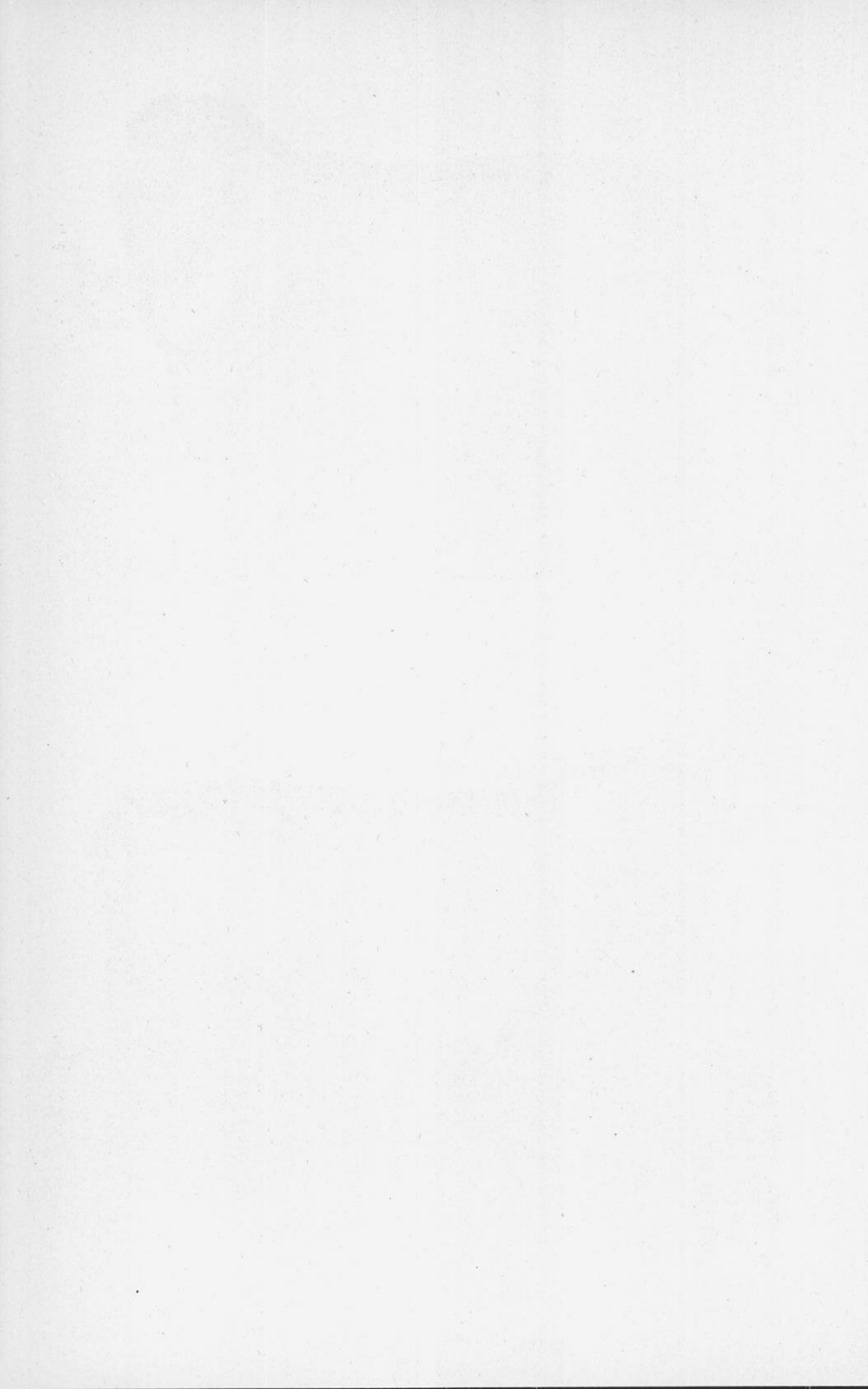
The Chairman — It is not necessary; it will go on the record.

Mr. Crosse, of Verona — Will Mr. Adams be so kind as to give us a proper formula for making butter, so we shall know how to increase our product and make it better.

Mr. Adams — I think I can give it inside of four minutes. In the first place, set your cream just as quick as the milk is drawn. I want to go back a little further than that. See to it that your milk is drawn right. See to it that the man who milks don't sit down under a cow and put the pail right up under her, and let everything in the pail that is on the outside of the cow as well as the inside; that is the first thing. If you have got anything in the milk that don't belong there, you can't get it out if you put it through all the strainers on the top of the earth. See to it that it don't get there. Then put it in an eighteen-inch pail eight and one-half inches in diameter, with a drop cover over it, and put it



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in ice water if you have it, if not, put it into spring water or into a tank next to your wind mill, where the water runs through to your stock. After that has stood twenty-four hours, if it is in the windmill tank, or twelve in ice water, take it out and skim it. Put your sweet cream in a pail and keep it somewhere at a temperature of about sixty degrees. Then when you have accumulated enough for a churning, take it out and warm it up to about sixty-four degrees, until it reaches a point of slight acidity. Never churn any amount of cream which has had any cream put into it for twelve hours previous to the time of churning; otherwise you will have cream in different stages of ripeness. Then get you a churn with any kind of inside fixtures, and if your cream has reached the right degree of acidity and is at a temperature of sixty degrees, you can churn in all the way from thirty to forty minutes. When the butter has come the size of very fine shot, put in a pail full of weak brine and whirl the churn three or four times. The buttermilk will settle to the bottom and the butter to the top. It cuts the buttermilk away from the butter globules and you can separate them easily. Continue the treatment with brine until the water runs off perfectly clear. Then two methods are open: You can either put your butter in just as strong a solution of brine as you can make and let it stand for an hour and draw off and then treat it with brine again and draw that off and then pack it up direct from the churn, or you can let it drain for half an hour, take it to the butter worker and salt it while it is moist and work just as little as you possibly can to get the salt in and the buttermilk out. Then if you are dealing with the home market, put in ordinary ten-pound jars; if it is a Chicago or eastern market, put in wooden pails or tubs holding from thirty to sixty pounds. In filling your jars or wooden pails fill a little more than even full; then take a string or piece of silver wire and cut the top off. Don't rub it all over with a ladle and spoil the grain on the top of your butter. If you are sending to any particular butter market, find out what that market demands in the way of salt and butter color, and then do exactly what they tell you.

You can learn something from the experience of the man Mr. Hoard tells about in Jefferson county, who bought him a farm and then married, as he supposed, the best butter maker in Jefferson county. When he sent his first batch down to Chicago, the returns were about fifteen cents under the market price for the best butter, and the young man thought he had made a poor investment, and he was very angry about it, and so was his wife; and they sent a letter to the commission man and told him what they thought about it, because they couldn't appreciate their butter; and he wrote back: "Dear Sir: You are a fool. When you want to sell butter in this market, make the kind we want." The young man sat down and thought perhaps he was a fool and he wrote back to the commission man, and he says: "Send me the kind of butter that sells in your market. Enclosed find two dollars." The butter came and they had a family gathering that evening, the hired man and his wife and some of the neighbors; and there wasn't a soul there but thought that butter was fifty per cent. poorer than what they used themselves; but he had some of this "horse sense" as they call it, and he made the kind of butter demanded there, and it has ever since fetched the highest price in their market.

Ordinarily a dairy man who wants to make butter must repair his judgment to begin with, and find out what good butter is before he undertakes to make it.

Mr. Sawyer—In skimming the milk you say have the cream where it will warm up to about sixty degrees. Is that case applicable where the churning is done, say, twice a week in a small dairy, and allowed to stand three or four days? Is it best to warm it to sixty degrees or keep it cool as you can until ready to churn?

Mr. Adams—If you can keep it any where between fifty to sixty degrees; I am not particular about that point.

Mr. Beach—Mr. Adams left out one very important part, that is, that the cow should be well fed to produce the milk. There is no other way. It is a bad dairy man that can spoil good milk.

I was tempted to say something about these common cows

that they call scrubs. Now, I don't want to defend the scrub nor I don't want to say anything against the teaching of our leading men; but sometimes I feel that they don't give the old cow half a chance; and the man who has nothing else goes home discouraged and he says "they say I can't do anything with my cows because they are not Jerseys or Holsteins." But this man has taught us that sometimes we have good cows; and if we go to work and do the best we can, with what we have got, we will soon find we have a great deal better ones than we thought we had. My cows are all Jerseys pretty much. Now, last winter I happened to have two cows that Clark says are Durhams but I think they are scrubs. I took them and milked them and they gave, the two of them, thirty pounds each, sixty pounds for the two in twenty four hours. I had two seven-eighths Jerseys, good ones, and they gave just fifty-seven pounds of milk.

Mr. Clark — The pick of the herd?

Mr. Beach — Yes; the pick of the herd. They gave fifty-seven pounds of milk. The two Jerseys gave three pounds and two ounces of butter and the other two cows gave three pounds and three ounces — another ounce, that is all there is to it. (Applause and laughter.)

The Jersey is the best cow; but if you have a cow that will make a pound and a half a day don't kill her and look around for somebody to sell you a high-priced Jersey.

Mr. Sawyer — I would say, start right where you are. If you have got common cows find out what your common cows are worth to you. If you are selling milk, find out the cows that will make you the most milk for the least feed; if you are making butter, find out the cows that will make you the most butter on the least feed; that will decide the question; if they are scrubs, let them be scrubs, if they are Jerseys or Holsteins or anything else, I don't care what they are so long as they suit your particular purpose.

I have here a few figures. I won't bother you to read them all, but I want to read the total. The value of milk from cows in February and March, also giving age of cows, etc., etc. The first of March I took a farm on shares, and

the first thing I found out was what cows I wanted to winter this present winter. For that purpose I went to weighing the milk; I was selling milk, and I have taken eighteen of those cows here; the average money received per cow for the months of April, May, June and July was from \$9.93 down to \$2.76 per cow. If anybody had told me there was that difference in cows I wouldn't have believed it, and I don't suppose you would. Just nine of those cows made over five dollars a month average, the other half made less than the five dollars permanent for milk sold. If those poorer cows in that herd, just one-half of them, could have been sold before our severe winter came on, I would have made very good money for my year's work; but there wasn't one cow sold, they were all wintered and I am out my year's work and between two and three hundred dollars besides. Why? Just because one-half of those cows were not sold when they ought to have been sold; that is all there is to it.

Mr. Thorpe — A good many farmers through this country think it is too much trouble to keep a record of the milk. I tell you it is no trouble at all. If a man gets interested in his business, his hired man will get interested in it. You let the hired man have the cow that gives the most milk and he will milk her dry every time. He wants the best record. And you let him have the cow that milks the easiest and he will milk her dry every time.

I want to tell you how I keep a record of my milk. I take a piece of paper and line it both ways, up and down and crossways; up and down with ten lines for my ten cows and crossways with thirty-one for a month, you understand; then I put the names of the cows at the top of this paper over each column, between each line and down below I put the day of the month, beginning with the first day and going through. I tack that to a piece of planed board and hang it right up in the barn any place where it is handy, in some place where I have to go past it to strain the milk, then I got a pair of scales, spring bobs. After I milk a cow I go right around to these, hang the pail right on the hook and it shows how much I have got; I have my pencil and I mark it down for morning's milk in its proper column and I

milk another and put it down until they are all milked; I have this column wide enough so it will allow two rows of figures, one for night and one for morning; then at night I put the weight down in the same way, just opposite the weight of the morning's milk. That is one day's milk, you understand. When the month is done the paper is full and I have to make a new one.

Mr. Larkin — I would like to ask the gentleman if he weighs the milk himself or trusts his hired man to do it.

Mr. Thorpe — Of course I would trust the hired man to do it. I will tell you what I have done to find out whether he cheated or not when I have been away. When I would take the milk in out of the creamery, I have carried it in on the big scales and weighed it to see if it figured up what he had on the paper. I have tried that three times and found it was all right.

Adjourned.

THURSDAY, February 9, 9 o'clock A. M.

Ex-President Arnold in the chair

The Chairman — The time has arrived for opening the convention and, as the speakers that were to address us this morning are not yet present, those that are here may discuss such matters as they desire to take up until the speakers on the regular programme arrive.

Mr. Butterfield — I would like to say a few words.

The Chairman — What is the gentleman's name?

Mr. Butterfield — I am said to resemble Joshua Whitcomb somewhat, but my name is G. C. Butterfield.

Almost every man, especially among the Grangers, has a hobby and I have one, and my hobby is the subject of the criminal adulteration of food. I don't want to inveigh an anathema against the adulteration of harmless things like oleomargarine and cotton seed oil, but against the adulteration with mineral poison of our every day food and drink.

As I said, it was a hobby with me. To illustrate that, let me relate a story which is old perhaps but it may be new to some of the grangers. A gentleman went to an insane asy-

lum and he saw a man riding a shaving horse and he was pulling on the bridle and whipping away and didn't give the poor thing any peace at all. The visitor said: "Why don't you give the horse a rest? Get down and let him rest a few minutes." and he says, "I can't get down, it ain't a horse at all." Why, what is it?" "It is just my hobby, and when a man gets on a hobby he can't get off." Now, I have got a hobby and let me say first that we grangers got up a howl a little while ago and made a tremendous kick against oleomargarine. Mr. Adams has shown us the great increase of butter from these modern dairy cows. Why, they milk all away, so to speak, into butter and cheese. But some of our honest dairy fellows have got onto a racket, something you don't understand. I raise steers and heifers and I sell Mr. Armour my steers and he presses out the suet and he gets what is called oleo, and he puts that in a barrel and our creamery man takes a barrel of that and hides it behind the door and he sprinkles it with cream and he makes elegant, delicious, toothsome butter; splendid butter, fresh from the Spring Brook Creamery in the country! Well, if he don't put in any rancid lard or any deleterious substance, I undertake to say that, as far as I am concerned, I had just as soon have my butter churned from the steer as from the heifer. (Laughter and applause.)

There has been a great kick and they have gone to congress, and they want the general government to take it up because, forsooth, they are adulterating our lard with cottonseed oil—a vegetable oil, a harmless thing, perhaps it is as good as olive oil for all I know. The Jews don't eat any hog and consequently are not afflicted with cancers or scrofula. There is a tremendous row between the great grain producing districts of the west and the cotton districts of the south. But if they don't put in any unwholesome substances in these mixtures, further than this vegetable oil, I undertake to say that it is harmless. I will go a little further; moral suasion is a good thing, but, before the millenium when human beings will cut a fellow's throat for a ten dollar note, I want to say that legal suasion is a great deal better thing.

The motive I have in addressing these people at this time

is to put them on a train of thought, and to get before them a set of facts that they shall examine and think over regardless of party; so that they may in their legislative halls come up here and enact laws for the benefit of the human race, particularly the American race. We have establishments in Chicago and Milwaukee for adulterating and manipulating all our whiskey, and what not? They buy black strap molasses for thirteen cents if they can, if not for fifteen; they make it any degree of color you please with salts of tin, and then they take glucose to give it a body; then it is liable to detection because it hasn't got the heft and they put a solution of lead into it; and when you go to the store to buy "sugar drips" to eat on your buckwheat cakes and to delight the babies in the morning, what do you get? If some one has passed a bogus dollar on you, you will be out just ninety-nine cents, nine mills and a fraction of a mill; but when you buy a gallon of this "sugar drips" for ninety cents you have laid the foundation of disease and death, or at least of premature decay and destruction, perhaps, of your whole family. Now, I am assailing a well established industry, an industry where some man, perchance, is making a dollar, who is riding behind fast horses with a coat of arms on his panel and two lackeys behind with bugs on their hats — who is "aping the English, you know." I used to know something about the grocery trade and I will cite you to something I read in a newspaper that agrees with my observation.

Formerly they used to clarify our sugar with bulls' blood and bone dust and harmless ingredients. Now I defy any man to go into Chicago to day and buy a barrel of pure New Orleans sugar, Muscovada or New Orleans molasses, direct from the plantations. It has got to go through the manipulations of the refiners — not the refiners but the adulterators — first. To-day they clarify the sugar with acetate of lead, a poison that you can't wholly eliminate any more than you can get all the water out of alcohol. And the scientists and the physicians say that a mineral poison in the blood has got to bang itself around and wear itself out like flood wood in a whirlpool, if you please, and that it is the fruitful source of Bright's disease. It accumulates in the kidneys and in a

few years the victim is done up. I am not saying anything about this *terra alba* or buffalo bone and a great many other harmless (?) things; that makes no difference. There is not a man in my presence or within the sound of my voice but knows that it takes twice as much sugar to sweeten a cup of tea than it formerly did.

Had I time I would like to tell you about the vinegar that will take the pink out of the child's lip in two minutes and will eat up a jack knife; that is made up of rain water and sulphuric acid or acetic acid or some acid; it is not vinegar at all from any fruit; it is mineral poison. And if I had time I would tell you of the dynamite rum that is dead shot in five minutes; just take two nips and you want to be making your will; that upsets the reason and boils the blood, and brings forth all the latent cussedness and wickedness a man may have lying down in his heart.

At my home our first-class hotels buy what they call elegant whiskey for eighty-three cents per gallon. It beats the government tax and the man that drinks it. It never saw a still. It is a bastard counterfeit of old-fashioned red-eye ardent. It floats a bead, has the smell, burn, color and flavor with all the essential qualities for a complete deception, and will induce a drunken delirium instantly. Yet, with all this, there is no alcoholic spirit about it. It is only a vile chemical compound of virulent poison concocted in a drug shop.

Now we have kerosene tests; that is a good thing, and we have a lactometer for the milk for too much pump handle; that is a good thing. But what we want to have now, is an inspection law for whiskey. Let the inspector have an hydrometer such as these wholesale fellows weigh spirits with and go around into these dives and places and pour some of this dynamite in, and it would be a give-away I think, as there are no spirits in it but an evil spirit. I undertake to say, moreover, that this would be a step in the right direction of practical temperance. I have only to add that whoever will suppress these criminals and these manipulators in these days that are putting poison into our young men and

are putting poison into our food and slaughtering "the innocents" of this broad land, will be doing God's service. (Great applause.)

STATUS OF WISCONSIN AGRICULTURE.

BY W. H. MORRISON, SUPT. FARMERS' INSTITUTES, MADISON.

I have changed the title of my paper a little. In going about the state, I find it is very rare that you will find a farmer that is satisfied with his balance sheet. They are not making money enough. And I sometimes think we could solve the problem of the boys remaining on the farm, if we could only make more money. "There is nothing that succeeds like success." If you will point me out a farmer who is making money, making a grand success, I will show you, as a general thing, a farmer who keeps his boys on the farm. Our farmers are groping around in the dark; they are first clutching at one thing and then at another. I remember only a short time ago that Hiram Smith said that he got tired of sitting at the table and dealing out pork and potatoes to half a dozen hired men and raising wheat and carrying it to Sheboygan, and he says: "I commenced dairying with three cows; then," says he, "I run in debt and added four the second season, making seven cows; I didn't know whether I was going to make dairying a success or not." To-day Mr. Hiram Smith is milking a hundred cows and selling something like five thousand pounds of butter annually, which is the outgrowth of that small beginning of three cows.

When Mr. Dunham joined two or three of his neighbors and imported "Success," the celebrated stallion, his neighbors soon got tired and said to Mr. Dunham, "Let us out of the deal." Mr. Dunham turned around and mortgaged his farm and bought the other three gentlemen out and went on, and you know the result. Mr. Dunham is worth, to-day, a million dollars, and he has made it dealing in imported horses and draft horses and so on. So I say we are clutching around in the dark; and if I can throw out any hints

which are useful to you, you will return to your homes with new enthusiasm. I remember a gentleman said to me at Oconomowoc last winter, "I am going home to my farm thinking more of it to-day than when I came;" and if you can go to your farms after this convention, thinking more of them, we will be perfectly satisfied.

Conducting Farmers' Institutes throughout the state I find a wide difference in the financial status of farmers, and the gulf between the actual and the possible can approximately be traced to a lack of systematic effort. In many of the northwestern counties of the state, where grain is the chief dependence, we find depression and embarrassment caused by nearly a total failure from the ravages of chinch bugs. In all the southern and central portion the drouth was so severe and long continued that hardly a half crop has been realized.

Are we not correct when we say that the majority of our farmers have less of the where-with-all—the running resources of the farm, such as straw, hay and grain to sustain their live stock than ever before? That more money has been or will be expended for imported hay, grain and mill-stuffs than in any five years heretofore? Reliable information gives \$400,000 as the amount that Green county farmers will pay for imported feed during the present season.

You can make your own estimates for the state.

The question that most concerns the farmers of our state to-day is, are we making the progress and advance we should?

If we are not we should at our conventions and institutes discuss this question thoroughly and inaugurate reforms at once.

If we are progressing with some degree of success and we find that the greatest realization per acre comes from the counties that have not been considered the most productive, it will tend to show that intelligent methods and adaptation to purpose is one of the great wants in an educational way, study, comparison of methods and close watching to improve at every point. In other words, doing everything as well as we know or can find out about.

That there is better adaptation of farm methods in some sections than others, that combining different farm industries does produce different results, and that some special feature of farming can be often introduced without injuring or diminishing other established products, but actually increase them, is somewhat clearly shown by a comparison of farm products of the following ten counties: Crawford, Ozaukee, Rock, Sheboygan, Calumet, Richland, Dane, Grant, Green and Jefferson counties.

Taking first the acres of improved land in each county, we find that the combined product of wheat, corn, pork, butter and cheese for each was as follows, and the value in dollars and cents in proportion to production:

	<i>Acres.</i>	<i>Per Acre.</i>
Crawford..	98,000	\$3 25
Ozaukee	100,000	6 81
Rock	316,000	6 95
Sheboygan.....	195,000	7 80
Calumet	110,000	6 25
Richland	133,000	5 40
Dane.....	456,000	5 95
Grant.....	373,000	5 40
Green.....	248,000	7 40
Jefferson.....	188,000	8 37

A close inspection of the census of 1885 for which the state paid \$40,000 will show that the dairy is not an industry that forces grain out of the list of farm products, or decreases its yield per acre, but in some cases has increased it, and in no instance decreased them, and so in the exclusively dairy counties, this grain exhibit in yield per acre is the full average of the grain counties and in the aggregate compares favorably with them.

[The crop of prime importance is hay and pasturage. The pasture grass alone, of this state, gives an annual contribution of thirty million dollars to our revenues. The hay crop is worth half of that amount. Now how much hay can an acre produce? What is the yield on your farms? The average throughout the state is but a trifle over one ton to the acre. We are using nearly one-half of our improved land for pasture and meadow.]

Will it pay to devote an acre of good land and receive one ton of hay, when the same acre will give us five times the nutrition or feeding value in fodder corn, or if you are abreast of the times, fifteen tons of ensilage?

Did the 10,000,000 acres of wheat, that gave only a yield 10 bushels to the acre pay our farmers who banked their money and labor on it last year?

Exclusive dependence on grain raising must cease and live stock and dairy products must take the first place in our farming. The corn crop is our sheet anchor. We are commencing to appreciate its value and also the possibilities of our one million acres of corn. The average yield is only a trifle over 50 bushels of ears to the acre and yet you can point out scores of farmers that double that amount. Theo. Louis on a sandy farm in Dunn County, 100 miles north of Madison, reports 50 acres of dent corn that gave a yield of 112 bushels of ears to the acre.

The only way to obtain more grain is to keep more live stock; even the old worn out wheat fields will give us again the old yields of 25 and 30 bushels per acre. Already Sheboygan, Fond du Lac and Jefferson counties produce the same amount of grain as ever, since they have doubled their yield of hay and corn to feed their increasing herds, and the dairy product amounting to nearly a million of dollars in each county is thrown in as a premium upon intelligence.

Please bear with me a few moments and I will hurriedly point out some of the possibilities for the Wisconsin farmer in animal industry and dairy products.

The majority of our farmers look upon poultry as beneath their notice, and I have sometimes heard them call it woman's work, but I know of one farmer's wife in this State where the item of poultry and eggs annually amounted to \$300. The census give the annual amount of poultry and eggs of the United States as sixty-five million dollars. More than all the orchard products of the whole country.

Sheep-husbandry at present is somewhat depressed, but it has in the past been a source of profit to our farmers and has done more than any other branch of farm industry to restore our worn-out wheat lands and even the innocent

sheep will be able to hold its own against all the politicians of the country.

Early lamb raising to supply our large western cities with choice, high priced meat is a very remunerative branch of this industry.]

[What are we doing in swine-husbandry? We are selling over one million of hogs annually and the bulk of the pork crop has to be carried through our severe winters at a cost of \$3.75 for a shoat weighing 100 pounds to merely sustain life and in many instances the shoat weighs no more in the spring than it did in the fall. Are we not correct in asserting that our farmers pay an annual tax of over three million dollars for not studying in detail this problem of pork making? As an argument to sustain the point, I need only to mention that Wisconsin's greatest pork packer proposes to offer a large prize to the farmer who will deliver to him the best bunch of 250 pound hogs, suitable for bacon. This he is compelled to do to attract the attention of farmers to the fact, that their "ideal hog," a 400 pounder eighteen to twenty months old is not wanted, but a small hog of quick growth, fed less corn and more clover, milk and shorts is the demand of the market. The market now calls for a hog with balanced meat, not animated lard. When this want is supplied with a March or April pig slaughtered in December, we shall add to the revenues of our farms nearly four million dollars annually from this source. Shall we make the effort, or shall we group along as in the past?]

I have not time to speak of the production of beef. The rearing of cows for private families and the dairymen near our large cities or for the hundreds of cheese factories scattered all over our state. Sheboygan county has over 100 factories; Green county, 200, and butter factories are being located in the northwestern portion of the state, where three years ago you could hardly induce a farmer to keep more cows than necessary for family use.

Who shall furnish the 1,500,000 horses annually needed by the United States?

Over \$100,000 were paid for horses at Oregon during the year 1887.

Who will supply the fifty million pounds of butter and the forty million pounds of cheese annually produced by this state? and it is not impossible for us to add one or two cents per pound in quality. Are there no opportunities or possibilities for the Wisconsin farmer?

I am thoroughly of the opinion that the scientific, educated farmer of to-day leads in agriculture and stock raising, and *always will*. He is also the most prosperous and happiest farmer in the community. Let us have more educated farmers. I congratulate Prof. Henry upon the passage of the experimental bill. It will enable him to give us more experiments, exalt agriculture, make it a profession, and the outgrowth will be a class of young men who will not be satisfied with a short course in agriculture at our university, but as full and thorough a training as for any of the professional courses. From all sides comes the call for more light and knowledge about agriculture. The idea that no intelligence or study made a successful farmer is fast giving away to the better opinion, that industry and thrift will follow mental culture, as surely as seed-time is succeeded by harvest. The science as well as the practice of agriculture must be progressive and the time and surroundings demand that the farmer should be fitted by education for every species of intercourse with his fellow man, and be fully prepared to fill any and all positions that the interests of society may demand. He should not leave to others the prerogative of doing his thinking, for "he who thinks will always govern him who toils."

The educational feature that is now becoming conspicuous in our state agriculture is one of which we may feel proud, and in conventions, granges, clubs and institutes, their great educational power will be directed for our future prosperity. It is the interchange of thought, bringing the successful practices and methods of one county in comparison with those of others, that give us a broader insight into our business as cultivators of the soil, and the success of the one gives us sufficient hope and new inspiration, and

the prosperity of a county, how it was attained, gives new light and courage, shows wherein new industries may be added to the farm, that will enlarge the revenues, call forth the same system, economy and business forethought that secures success in the other great departments of industry, and that the profession of the farm shall stand out the equal of the world's best type of enlightened progress.

DISCUSSION.

Mr. Everson — Mr. Morrison speaks of there being, in the production of milk and butter, a shortage of some three hundred thousand dollars in one section of the country. It has occurred to me that might be on account of the severity of the drouth in that section of the country or from insects or other causes. I was up in the northern part of this state a short time ago and found that the drouth had been very severe. There was one farmer that had one hundred and sixty acres of land, his surroundings were very pleasant, a man of considerable intelligence, and had two sons at work besides himself, and he said he hadn't made a dollar in farming for the last five years; they had had fearful rain storms and insects that made it impossible for them to more than make a living. Mr. Morrison rather intimated that they had not been successful for the lack of proper methods of farming, that they had not treated things in the proper way. I think, it was more, perhaps, because of the drouth and the insects.

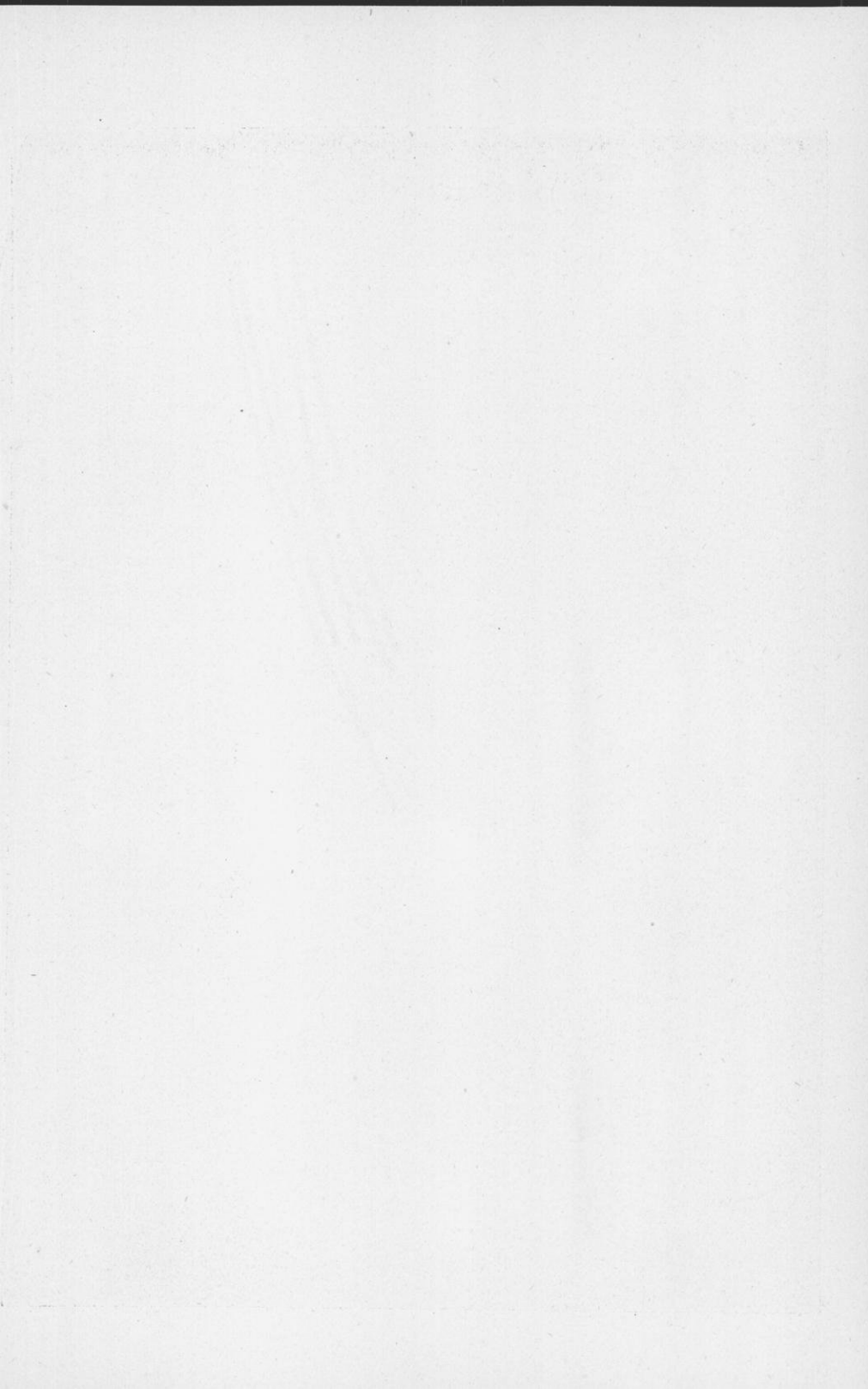
Mr. Morrison — I wish to say to the gentleman that the figures I gave were taken from the census of 1885. And the same census and the same figures in different counties range all the way from ten dollars to fifty-five as the gross product of the cow; and as near as I can figure, it is in proportion to the intelligence of the county. I think that was demonstrated in Jefferson county; some three years ago Mr. Hoard made a canvass of that county and he found that the town of Watertown was selling its butter for something like nine cents a pound less than the town of Koshkonong, and it

seemed to be just in proportion to the dairy literature that was taken. If you will study the census you will find a vast difference in the methods of farmers in different portions of the state; in some portions the farmers become wealthy in pork raising. In Grant county I can point out men that have accumulated all the way from one hundred thousand to seven hundred thousand dollars almost entirely in pork and beef. It is this wide hiatus between successful and unsuccessful farming that we are trying to fill up. It is not to pull down the successful farmer but to lift up the unsuccessful. All you have to do is to look around you at home and you can point out on one side of the road a successful farmer and on the other side an unsuccessful one. Now, if we can only meet and work together and teach the intelligent methods of the successful farmers to the unsuccessful ones, we are all right; and I think that is the great object of these conventions.

Mr. Everson — I think that these reports we get sometimes are misleading. Now the last two years I see they claim that they have made a good deal of money in cows, dairying, and the last two years have been very severe years in regard to drouth. We have not had much pasture the last summer. If we could find out, these gentlemen that have made so much money with their cows, perhaps have bought mill feed at such enormous prices that the net results after taking out the cost of labor and the cost of the feed would not be very large. What we would like to get, as near as possible, is some honest statement from honest men.

Mr. Morrison — When I was on the farm I used to be called an honest man. (Laughter.)

I have not been off from the farm only some seven or eight years, and I still carry it on, and I didn't know that I had progressed so fast. (Renewed laughter.) I will tell the gentleman that the figures that I have given him are not inconsistent. Mr. Gage I referred to produced three hundred and forty-five pounds each from thirteen cows, or four thousand four hundred and eighty-five pounds; but it has not been done in one year, it is the growth of many years. I remember Mr. Gage coming to me something like twelve



THE COTTAGE GROVE HERD OF
POLLED ABERDEEN ANGUS CATTLE
THE BREED THAT BEATS THE RECORD
C. E. LESLIE, COTTAGE GROVE
DANE CO. WIS.



BRANDS & CO. WIS.

years ago, and he says: "I am keeping six cows on my farm and all that I am doing with these six cows is to supply my family with milk and butter." Says he: "Once in a while Mrs. Gage will sell a few pounds to the corner grocery store, but we are not receiving but very little." And after he went to the dairy conventions, he says: "I am going to turn over a new leaf; I am going to hang a spring balance in my stable and weigh the milk and weed out my cows; those that don't come up to the standard I am going to sell to the butcher or to some other farmer;" and for two years he has been pursuing that course. The first year he made out to sell one hundred and twenty-five pounds and so on, he kept creeping up and creeping up and the last letter I received from him last May, after balancing up his books, he says: "I think I can gain five pounds next year if nothing happens, and make it three hundred and fifty." You see, he has been striving and working and bending all his energies in this direction, and there is just where the farmers fail; we don't throw any enthusiasm or study or life into the business; we do not try to see how much we can do. Now here is Mr. Beach, a neighbor of Mr. Gage I referred to; I take Mr. Beach to be an honest man, and I would like to hear from him in reference to Mr. Gage.

Mr. Beach — I know all about Mr. Gage. He lives near me and I have handled his butter for several years; he could make butter but he didn't know how to sell it, and I told him to bring it to me and I would sell it for him. After a while I told him he could sell it as well as I could, and now he attends to it himself. He has gradually been growing up in this business and making it successful. That is what he has done, and if we would all take some branch of the business and follow it up faithfully and try what we could do, we would succeed beyond our wildest expectations.

Mr. Clock — How long has Mr. Hiram Smith, that I hear spoken of so often, been in the dairy business?

Mr. Beach — Twenty-five or thirty years, I think. It is so long I cannot remember the time.

Mr. Clock — Many of these young men and those young men who have recently engaged in dairying should not get

discouraged because they cannot do in one year or three years as Hiram Smith and Brother Beach have done. Don't get discouraged, but keep making an effort every year and do better and better, not only with the cows, but in making pork, in raising horses, in the production of corn and every other product of the farm. Try to do better the next year than you have done this; make every honest effort to do it; that is the only way in dairying. We can't expect to do our best in one year; it takes many years to get rid of poor cows and get the best. One cow you may have, perhaps, if you haven't tested it, may be your best and most profitable one. Hiram Smith, of Sheboygan, and many others have been in the dairying business for many years, and since the institutes have begun their work throughout the state, their success has created an interest in dairying. We cannot expect to compete with Sheboygan county, where they have small farms and many Germans to do the work. We cannot expect to compete with them anyway, with three or five years, when they have been trying to get there for twenty-five or thirty years. But don't let us get discouraged, but try and improve it every way in farming.

Mr. Dwight— The first thing in farming, it seems to me, is for a man to study his taste and aptitude for any branch of business. One of the largest farmers in our town told me last week, that if a man would give him a hundred of the best cows in Wisconsin, he wouldn't keep them for two years for them, because he has no taste or aptitude for that business.

In the southern part of this county we have carried the cultivating of corn to such an extent, that some fields are nearly ruined. You want to go slow on this and not plow up all your grass. This kind of land will be ruined by going in with our sulkies and making little ditches, and when the tremendous rains come, they wash out more than we can get back in days. You want to put such land into a rotation like this: one year in corn, one year in small grain, one year in clover, and if your clover catches and you pursue this rotation, you will find your land will increase in

fertility. Now, it is idle for the average farmer to keep up his land solely and simply by barnyard manure. I believe in that most emphatically, but that alone will not do.

FARMERS AND FARMERS' WIVES.

MRS. MARY E. WARREN, FOX LAKE.

In choosing my subject I supposed I had obtained something that I could write upon easily, by combining my own experience and observations with that of others. But when I wish to concentrate my thoughts its "muchness" troubles me, "especially" as I am expected to encompass it, at least far enough to make a period, in the brief time allotted me.

It makes me feel much as the old lady did when her Monday's work confronted her. She said there was so much to do she didn't know what to do first, so she believed she wouldn't do anything, but I presume she thought better of it after awhile and so did it. I therefore decided to draw a practical lesson by selecting two farmers for my subject. Not extremes, but such as may be found in almost any community. Not the one that has become immensely rich by farming, for they are scarce, or the one that has made an entire failure, for they ought to be scarce. But in my search I find two men in the common walks of life with uncommon names, viz.: Brown and Smith. Of course neither of them are present and I can say what I please about them; but for fear their wives may be here, I must be a little guarded in what I say about the women.

Mr. Brown and Mr. Smith were both enterprising young men, who had each secured a good farm. Mr. Brown's farm was considered a little the better of the two, and he had the advantage in another respect, his education was a little better than Mr. Smith's. Both of my heroes, like Adam, knew it was not good for them to live alone, and accordingly each secured a good wife, as every sensible farmer should. So far they have followed the original plan. But we would not have them do as Adam did in all respects, for by his dis-

obedience he lost his title deed, was turned off and had to preempt wild land. But we do find some of his examples worthy of imitation. Mrs. Eve's folly must have been a great trial to him. Still there is no record of his becoming angry with her and heaping upon her abuse; or of his making her an example for drunkenness, or for smiling at other women, neither did he apply for a divorce, but went to work like a man; he knew mistakes often happened in the best regulated families. He helped gather leaves and food and was evidently a good provider, and thus we find it to-day.

The first thing with the good provider is the food and clothing question, which constitute the foundation, and yet how often we hear the farmers say, if it wasn't for eating and wearing, how soon I could get rich. Mr. Brown and Mr. Smith settled on adjoining farms, and the first ten or fifteen years paid little attention to each other's business affairs, but were both trying to prosper each in his own way. Mr. Brown started with one very pronounced idea, and that was to get rich. Mrs. Brown also, had ideas. She desired above all things to have a happy and well regulated home. She wanted to be a "helpmate" in its broadest and truest sense, and to do this she must have a system, so as to economize and work according to their means, and keep living expenses inside of a stated sum. Mr. and Mrs. Smith had ideas, but their ideas harmonized, and they worked and managed their business in perfect harmony. Not so the other couple. Mrs. Brown often wondered why Mr. Brown was so averse to talking over living expenses with her so as to arrive at some understanding. She felt as though she was walking blindly, but attributed Mr. Brown's manner to his being so busy. At length she said to her husband: Hadn't we better come to some understanding about our family expenses. I am afraid I may not be doing just as you wish me to by not knowing the amount you wish me to use. But unfortunately at the word expenses Mr. Brown took alarm, and suddenly became quite nervous. He replied by saying, there must be no expenses of any account this year. What need have we of expenses, to be

sure? This is our "honeymoon," wife; and let us get a good start, then it will be time enough to talk about expenses. But, quietly suggested Mrs. Brown, "we must live, and naturally must incur a little expense." That unfortunate word again causes Mr. Brown to become a little more agitated, and he replies hastily, "Yes! Yes! I know we must live, and we will, and have enough to eat, drink and wear. It will all come about some way, but we must guard against expenses, let us get something ahead first."

But, said Mrs. Brown, my dear you do not understand me; I do not wish any expenses more than is absolutely necessary; I am as anxious to get started as you are, but I do wish to live within our means, and to do so ought to have something set aside, or a stated sum at least, make it as small as you please, and I will manage accordingly. Mr. Brown listened patiently, and concluded the subject by saying, I must put every dollar into my business; I have nothing to set aside. Mrs. Brown said no more, but kept thinking the matter over and over again, and deciding every time that she was right; and although she was in need of nothing in particular, still she knew there was true economy in her plans. She felt there was a missing link somewhere, and as she studied the matter over, a shadow crept over her fair brow. This was all so different from her girlish dreams of domestic happiness. She had an exalted idea of a wife's and a mother's duties, and in her fondest anticipations always associated herself as near as possible with the perfect ones. Many a happy hour has she spent in thinking what a true helper she would be in all the plans pertaining to home life. And now how different the real all appears. For with all her penetration and ability, she cannot look ahead even one week.

She concludes her reverie with a sigh! feeling helpless, blue, despondent and nervous. She thinks she is of no use except to do the common work of the home, which she does not ignore, she is far too true a woman for that, but she realized she was capable of being far more than that, else why this God given ability? She knew she was her husband's equal mentally, and, that if he would let her stand

right up by his side, she would be of infinite value to him in many ways, as well as in the matter of making and saving money.

And thus the years go by, until we find both families surrounded by children.

Mrs. Brown and Mrs. Smith have always enjoyed each other's society. Mrs. Brown often ran in to her friend's home when feeling depressed, Mrs. Smith's bright cheery manner always did her good, she had so many plans to relate that she and her husband had entered into mutually.

Mrs. Brown had been thinking much of late about sending some of their children away to school. And on one particular morning Mrs. Smith called to see Mrs. Brown to tell her what they had decided to do about sending their children away to school. Mrs. Brown liked this idea very much, and concluded to speak to Mr. Brown about it at once.

Accordingly, the following evening when all was quiet she introduced the subject by saying, "Pa, hadn't we ought to be doing something about the children's schooling, as they have learned about all they can at a district school?" Mr. Brown hesitated a moment and then replied by saying: "We must pay our debts first." This was the insurmountable, and unanswerable theme, for he was no sooner out of debt than he was in again. Mrs. Brown has never known a want in all these years, except the want of appreciation. And yet she feels to a great extent that her life has been a failure, her ability thrown away, she realizes she has always been counted a cipher by her husband; still she knows that truth by her side, she would have counted ten every time in the the battle of life.

The planning for loved ones constitutes one of the sweetest joys in life, destroy this and you take away one of the greatest incentives to labor effectually. Anticipation is sweet to us all, and often far exceeds the real. The ideal is ours, the real may be ruthlessly torn from our grasp.

Mr. Brown often felt there was a mistake somewhere but "manlike" never thought of associating the blame, if any, with himself. For hadn't he worked hard early and

late? Hadn't he done the best he knew how? To which Mrs. Brown would have answered, yes! but might truthfully have added, you did not take me into full partnership! There was your first mistake.

Mr. Brown had formed a habit of late of dropping into Mr. Smith's to while away an evening now and then, and and he gradually became cognizant of the fact that Mr. Smith had a pretty smart family, he noticed, too, that, both Mrs. Smith and the children, were well posted. They knew the prices of everything from eggs to beef, butter and pork, and from the coarsest vegetables to the choicest cereals. They knew how much had been sold from the farm and how much saved for home consumption. And they were posted on other subjects.

Mr. Brown noticed they could speak intelligently of nearly every subject from the toboggan slide, to the white house, and understood pretty well, the wonderfully intricate subject of tariff, free trade, protection, high license, woman's suffrage, and last, but not least, prohibition.

Their farm was large, well stocked and well tilled, they always attended church and lectures, something Mr. Brown never had time to do. They had good horses and a plain family carriage and believed in enjoying life as they went along.

Mr. Brown was going to have a carriage when he could afford it.

On one particular evening, Mr. Brown went over to Mr. Smith's a little earlier than usual thinking to have a good visit. As he went in Mrs. Smith asked him why he didn't bring Mrs. Brown with him? Mr. Brown thought he detected a sinister meaning, and when Mr. Smith spoke and said, "yes! Brown it wouldn't have cost you a cent." Then he was sure of it.

But the evening passed off so pleasantly he forgot all about it, until he started for home, the night was bright and balmy, and our friend walked slowly homeward, and meditate after this wise: what a smart family Smith has, Mrs. Smith, too, how bright she did appear, and yet, when she was a girl she wasn't considered as smart as my wife, or as

well educated. My children, too, stand as high in their classes as the Smith children. Mr. Brown never for a moment thought of comparing his wife and children with any other man's, he was far too honorable for that, but he could not be behind to the fact that there was a difference, and he began to think that after all, Mrs. Brown might be right in regard to the childrens education.

And if I were writing a novel instead of dealing with solid facts, I would say Mr. Brown went home and spent a sleepless night, and with the dawn a light suddenly revealed to him his failures. A light that filled the whole heavens with its effulgent glory; the heavens and the earth rejoiced, the birds sang, and all was jubilant when Mr. Brown arose from his sleepless couch, made a hasty toilet, sought his family and embraced them, saying, "I have found a panacea for all our woes;" but it is not a novel, nothing but a practical, unvarnished picture of every day life as I have seen it. And the best I can add is to hope that before Mr. Brown reached his own door he had solved the problem rightly, as every intelligent man will who never gets "too old to learn." And that he would ever after recognize his wife as his equal, and that he could see that he had been trying to fly with one wing, and paddle "his canoe" with only one oar, and that was the reason he finds himself no nearer the head of the stream, he has made more circles than straight lines, and didn't enjoy his trip because he had taken it alone. To the young men present, and who contemplate farming, we would say, get a farm, and then get a wife. If you are so unfortunate as to marry your inferior, bring her up to your level—few women refuse to be elevated. If you marry your superior, cultivate yourself, and be sure to take no steps backward.

Put your wife at the head of the home with power to act, put yourself at the head of the farm, and never get above talking your plans over with your wife, or listening to hers; don't get out of patients, or go to sleep while she is talking, let her make suggestions about your work without feeling that she is meddling, never fear that if you act upon her suggestions she will get the start of you for that would be

a "Give-a-way" on yourself, never get above the little details of home life; some men considers the home of small importance compared to the farm and stock. Home to them means, a shelter a place to eat, and sleep in, but let the light of home go out and all is changed.

When you get machinery get the best and just enough, and don't forget that although a very small portion of house work can be done with machinery, still that little is necessary, remember, too that house work may be relieved of much of its drudgery by commodious arrangements, always keep in mind that your wife is your partner, you and your wife are the head of the firm, if & Co. is ever attached let it be your children, and always let them feel that they are helpers, instead of burdens.

When your wife asks for a dollar remember she helped earn it, and don't "belittle" yourself by asking her what she is going to do with it? Remember you are a self-appointed banker, don't pinch the dollar until the eagle screeches, but hand it to her like a Lord or as you would to a King, never think it beneath you to give your wife merited praise, not stintingly or grudgingly, for no sound is so sweet to her ears, as the praise of her husband, when she has worked hard to provide a nice dinner, and for some unaccountable reason it is a failure, don't look cross but just notice how tired your wife looks, and mention the fact and cheer her by saying, "Wife this tea is nice and hot," or "How clean and white this salt looks." Keep the little clouds from gathering and you will have no tornadoes, and don't forget that your wife appreciates your tenderness as much and even more after growing old by your side in the autumn of life, as when you wooed and won her in the springtime. You never had, and never can have, a truer friend than your wife and if while walking by your side you should rise to distinction, as farmers sometimes do, and find yourself in legislation halls and thus appear to have outgrown your wife, bring her with you occasionally, let her see the machinery that grinds out our laws; it will do her good, and it won't hurt the machinery; she may not

look as fine as some other man's wife, and yet, be worth two of his.

Let no distrust or discontent enter the firm, keep no secrets for any one, that may not be mutually shared with each other, keep all the virtues, and crown them with content and charity. When looking for one another's faults, be sure there is no specks on your eye wipers, or dust on your glasses, try to hear and forbear.

Break all the alabaster boxes, while together you can inhale their fragrance. Scatter roses with as few thorns as possible, while each can appreciate them; for when either lies silent and cold in the best room in the house, no amount of display will interest them.

No prettier sight ever greets the eye than the farmer and his wife climbing the hill of life together, and standing hand in hand at the top, then with undimmed and untarnished affections, gently gliding down the opposite slope.

No matter which goes first, so that both cling to the silken cord of love and "meet at one gate when all's o'er.

The ways they are many and wide, and seldom are two ways the same. Side by side may we stand by the same little gate, when all's done. The ways they are many, the end it is one.

FORESTRY.

BY HON. GEO. B. BURROWS, MADISON.

Mr. President, Ladies and Gentlemen—At a very early age, I began acquiring knowledge of a disagreeable branch of Forestry. The *branch* was of the genus *Betula lutea*—alias Birch—usually about four feet long, and full particulars were imparted to me *a la* Kindergarten, either by my paternal parent or the teacher at the little red school house situated on one of the green hills of Vermont. The *impressions* left their mark and made me a *smart* boy. My next experience in Forestry was at a somewhat later period, when

I added to my store of knowledge by sawing four foot wood at fifty cents per cord, investing the proceeds in clothes and defraying my expenses at a New England Academy. I often wished in those days that there were no Maple, Birch or other hardwoods, for the soft Hemlocks and Spruce *sawed much easier*. During the last quarter of a century my experience in the great woods of Northern Wisconsin, where the pine tree towers Heavenward, has somewhat increased my *principal* and thereby added to my *interest* in forestry.

Ever since the illustrious wood chopper cut down his father's cherry tree, the male portion of Brother Jonathan's family has had a mania to swing an axe wherever a tree was to be found. This forest crusade has been and is being carried on to such an extent that at the present rate of consumption, in a few years it will be practically extinguished. In the consideration of this subject, not being in any sense a scientific man, and what little I know respecting vegetation and forestry only that acquired by actual experience, I propose treating this matter in a plain, practical manner.

It is a fact that no product of the soil enters so largely into the industries of the world as timber.

Cotton is not King!

Corn is not King!

Iron is not King!

But wood from our forests is the mighty monarch!

The total value of forest products for the year 1880 is estimated at \$700,000,000. It is only by comparison with the value of other known products that one can get the meaning of these figures.

The largest single product of the country as given in the census report is that of Indian corn, valued at \$679,714,499—though this is admitted to be an over estimate.

Other products are given as follows:

Wheat.....	\$174,291,850
Cotton.....	280,266,242
Oats.....	150,243,565
Buckwheat.....	8,682,488
Tobacco.....	36,414,615
Silver.....	41,110,957

Coal (bituminous)	\$52,427,868
Iron ore	20,470,756
Hay	371,811,084
Rye.....	18,564,560
Barley	30,090,742
Potatoes	81,062,214
Gold....	33,379,663
Lead and zinc.....	4,182,685
Coal (anthracite).....	42,110,957
Copper ore.....	8,886,295
Other minerals and irregular coal products.....	12,399,964
Total product of precious and other minerals.....	218,385,452

It will be seen on looking at these figures that the products of our forests exceed in value that of our crops of hay, rye, oats, barley, buckwheat, potatoes and tobacco taken together.

They amount to *ten times* the value of the gold and silver, of which we make so much account; and is more than three times the value of the precious minerals and the coal and other minerals combined. With such a showing I am sure no one can question the right of the woods of our forest to wear the *crown*.

According to Prof. Fernow, Chief of Forestry in the Agricultural Department at Washington, the total forest area (excluding Alaska) in round figures is 500,000,000 acres. A great deal of this is probably waste brush land, and a portion of the balance only thinly stocked with trees. Based on German standard, 400,000,000 acres must be kept in well stocked forest to give us a continual supply. Our forests in their present condition do not compare favorably in annual yield with the well-cared for and well-stocked continental acres. So probably we have reached the point where we should stop decreasing the area.

It is generally concluded by those whose judgment, experience and knowledge are most to be relied upon, that 25 per cent. of the whole area of a country is a safe and proper basis to be reserved in forest. Of all quarters of the world, America was originally the most thickly wooded with primeval forest. "But it is now doubtful," says George P. Marsh, in his classical book, *The Earth as Modified by Man*,

“if any one of the United States, except perhaps Oregon, has more timber than it ought permanently to preserve.”

According to the census of 1880 the wood-lands occupied 35 per cent. of the whole reported area. Since then, as well as prior, our forests have been cut with such reckless waste and prodigality that they are fast melting away like the dew before the morning sun. Take what is cut and what is destroyed by fire and otherwise is FULLY DOUBLE the natural increase by growth. Our forests furnish annually for

Lumber market and manufactures.....	2,500,000,000	cubic feet	
Railroad construction.....	360,000,000	“	“
Charcoal.....	250,000,000	“	“
Fences.....	500,000,000	“	“
Fuel.....	17,500,000,000	“	“
Making a grand total of.....	21,110,000,000	“	“

Ten million acres burnt over every year! The loss from timber fires is not less than an average of \$2,000,000 per state annually.

Only think for one moment, that, within the past four years, an area larger than the entire state of Wisconsin ravaged by fires! A territory larger than the area of Massachusetts, Connecticut and Delaware destroyed in this manner. Germany has but 34,000,000 acres of forest, which our fires would wipe out in less than four years. These forest fires are usually caused by locomotives, malice or carelessness. Some of the railroads have already taken action to prevent the recurrence of the evil from locomotive sparks. The plan adopted is to clear away the growth for 100 feet on each side of the track. A furrow is then run along the outer edge of this space, and the whole kept mowed and clean. During the year of 1880, according to the United States census report, 406,298 acres of wood-land was reported destroyed by fire in Wisconsin. In the northern part of our state often twenty forest fires will be running in a county at one time, and public sentiment dormant save where individual property is at stake. Few even take the trouble to put out even such incipient fires as might be killed with little effort. There can be no question but that

in the growth of young trees lies the certain guarantee of total extermination of much of our best forest land within a few years unless some effectual methods of protection are inaugurated. It is true we have a section in the statute to punish any person who willfully, maliciously or wantonly set on fire any prairie, meadow, marsh or wood land; but as far as the latter is concerned the law has been a dead letter. The law can never be made effective until we adopt some such course as the state of New York. There, the Board of Forestry have the whole matter in charge, and, by appointing fire wardens, have been able to prevent almost wholly the annual forest fires in that state.

And I deem it would be a wise plan for us to empower the state agents we have to look after trespass, with authority to look after the wood land fires as well, with a provision for the necessary compensation for such service.

The present total forest area of Wisconsin is about 17,000,000 acres, being 48.8 per cent of the total area. These wood lands lie in what is known as "Northern Wisconsin," or, say a line running due west from Green Bay to the Mississippi river. However, large bodies of hardwood timber exist in Vernon, Richland, Crawford and Sauk counties; but this region is thickly settled and the forests are being rapidly cleared for agricultural purposes.

A very erroneous impression as to our northern forests in Wisconsin, by non-residents, is, that it is almost wholly pine. I remember going from Stevens Point to Ashland soon after the Wisconsin Central railroad was completed between those two cities, with a large party of Madisonians. They were all surprised and disappointed in not finding one solid body of that wood the entire distance. However, it is not to be wondered at that such impressions had become general, for all that part of the state has been termed the "pineries," and everyone residing in that section was supposed to be a lumberman or in some way connected with that branch of industry.

Of course the percentage was larger originally, before the days of lumbering, but to day white and Norway pine does not exceed twenty-five per cent. of our northern Wisconsin

forests. This is the estimate of Senator Rust, of Eau Claire, who is a large pine-land owner, as well as manufacturer. Many others substantially corroborate and agree in his views. Until within a short time the impression has been that the principal value of this great wilderness was in the pine; no particular value was attached to the other woods, and no value whatever placed upon the soil—simply considered useful to hold the world together; all of which is a great mistake, as I will show further on.

Usually after the pine was cut—in many cases only the largest and best was deemed worthy of the woodman's axe—always a large percentage of the body of the tree was left where it fell, to burn or decay. The land was allowed to be sold for taxes, which resulted in the counties becoming the owners of tons of tax certificates and deeds.

I remember well in one of the largest counties, that so little care was taken of their tax certificates that they were kept in a dry goods box, accessible to any one that called at the treasurer's office; however, I never knew of any one appropriating any of them, as they were looked upon as being as worthless as a file of old newspapers.

In fact, Marathon county, which at one time embraced a territory larger than some of the New England states, could not collect sufficient cash to settle their state tax, which led to legislation by which the county conveyed to the state many thousand acres of land on which they had taken tax deeds.

Pine being predominant and the most in demand of all the woods in northern Wisconsin, I will first allude to that timber, which consists mainly of two varieties—White and Norway. Of the twenty six states comprising the New England, Middle, Western and Northwestern to the Rocky Mountains, only four are now able to furnish lumber supplies of different kinds of wood, beyond their own requirements. These four are Maine, Michigan, Wisconsin and Minnesota. The northern sections of the three latter states are the only localities in the whole twenty-six states that are able to furnish white pine beyond the wants of their own respective states, and the demand on them is so heavy

from all sections of the country that it will not be possible for them to respond to it for more than five or six years longer. The demand for pine is so great that it is being cut in our state at the rate of two billion feet or more annually. Senator Rust and other competent judges estimate the standing pine in Wisconsin at thirty billion feet; little more than would suffice to supply the consumption of the United States for one year.

You can readily realize that in a few short years, our pine, like the buffalos of the plains, will soon be numbered with the things of the past, or only found in picture books. Maine, Vermont, New Hampshire and New York could once boast of vast forests of white pine, and there is still some small sapling pine in the former state, but in the three latter it is *virtually all gone*.

It is the almost universal opinion that the pine will not reproduce itself; but this is a great mistake. The small undergrowth of other woods which always thrive in the shade of pine trees, together with the annual fires, kill the seed and prevent a new growth, but under favorable circumstances and cultivation, pine will continue to reproduce itself for centuries on the same area of country.

Hemlock comes next in importance to the lumberman, who having run short of pine is now cutting considerable of this timber. The total area in the state on which hemlock grows is about 10,500,000 acres, containing roughly 5,500,000,000 feet. The quality of the timber in Wisconsin is not so good as that grown in New York and northern Pennsylvania, although it is valuable for its *bark*, and the logs when peeled can be driven down with the pine and sawed at the mills into dimension stuff for use where coarse lumber is required.

It is scarcely ten years since the pioneer railroad — the Wisconsin Central — made a streak of light through the great woods to Lake Superior; now the northern forests are being literally gridironed with railroad tracks. As a result of this the country is being rapidly settled up. Cities and villages are springing up like magic.

It seems like a dream to me, when but a few years since

I traversed that region with my pack on my back, camping where night overtook me, and lulled to sleep by the sighing of the Pines.

Another result is the numerous mills which have been erected along the different lines for the purpose of manufacturing such lumber as would not float down the streams to mills and a market like Pine and Hemlock, for instance Oak, Maple, Birch, etc. It can not be truly said that we have no waste forest woods; not a tree that grows but has its uses and a marketable value. Even the black Jack Pine, long held as worthless, is now in demand for manufacture into pulp by the paper mills.

I have always contended that there was no better place in the great northwest for a man to settle in, for the purpose of farming, than in the northern part of our own state, particularly young men and emigrants with limited means. No where can you find a richer grain growing region or one that promises greater durability.

In what crops is northern Wisconsin excelled, and where is the average yield more abundant? In tame grasses it scarcely has a rival in the west either in quality or nutritiousness. That this is to be the future butter and cheese region of the northwest—the very seat of dairying enterprise, as much so as Vermont and the celebrated districts of New York and Ohio, is already well established.

The most heartless and cruel feature of recent immigration is the blind, unceasing rush of multitudes out upon the bleak and barren plains of the west, where not only is every comfort sacrificed, but health and life positively put in peril. In what more horrible condition could humanity be placed than on those treeless wastes, with no better shelter than cabins of sod or holes burrowed in the earth; no fuel but hay twisted into rope, with winter extremes of cold often from 50° to 60° and summer extremes of 100° to 112° in the shade. It is from such sections of flood-swept valleys and cyclone desolated hills, where the mantle of winter snows draw a veil over human suffering, that a wail of anguish and despair is yearly heard, that makes humanity

shudder and taxes the hand of charity to the uttermost even to preserve life.

The papers of to-day contain blood-curdling accounts of the recent blizzard. Never did death send a more terrible avant courier than the blinding, freezing blizzard, against which Dakota stands, with her treeless plains, defenceless. Without a note of warning, the familiar landmarks of one's home surroundings are transformed into a trackless waste. Many a poor victim has crossed the River of Death in attempting to reach his own door from some immediate point around his home.

The late terrible blizzard in Dakota has taught our Wisconsin farmers living in the timber portion of the state a good lesson — "to keep a good thing when they have got it," and "to let well enough alone." No settler of our northern forest need ever suffer from cold or hunger. It is true the cold has been nearly as intense, but being a timbered country, the wind is shorn of its deadly power; and, of course, fuel is abundant; consequently the people have been spared the suffering and loss of life which have overtaken the settlers on the great treeless plains farther west.

It is connected by a railroad system and water communication with all the principal marts, but the market is chiefly at home, owing to the demands of the lumbering interest. Labor in mills or forests gives assured yearly employment at good wages — here need be no idle population, no houseless families, no pauper class. The farm and the manufactory are alongside of each other. No diligent and economical person has failed to secure a home and plenty. Diversity of pursuits gives all an equal chance in the race of life.

Senator Hill, of St. Croix county, in an address to the Barron County Agricultural Society, said that timber lands were more fertile than prairie — that it had purer water and healthier climate.

Time and your patience forbid me from dwelling but slightly upon this subject esthetically.

In autumn the beauties of Wisconsin forests reach a culmination. All unnoticed a metamorphosis has been silently going on — the tender, vivid green of early spring has

deepened in richness and tone until finally wood and vale, catching the hectic flush of a dying summer, burst forth in a glory of color and beauty, like "a thousand sunsets all at once distilled like Hermon's dew," or "as if all earth had blossomed out into one grand Corinthian flower." The brilliant flame-colored sumac, the multi-tinted maple, whose crimson is so rich one might term it the blush of the woods; the oak in his robe of royal purple, crimsons and yellows and golden browns are flashing all around him as though there was a carnival among the trees, but no hue is brighter than the brave old oak; the golden-leaved birch, whose splendid spring tassels were wont to be worn by Indian chieftains with great pomp at the feasts of their tribes; the elm, whose branches in their graceful downward curve resemble a Greek vase; the pale yellow of the linden, all thrown into relief by the dark somber green of the pine, produce a symphony in color that must awaken the love of the beautiful in every beholder.

A reverential regard for trees and flowers is found among the people of Germany. Groves cover every hill top and shadow the humblest dwelling; "Unter der Linden" (Under the Linden) has become a household word throughout Europe. The flowers and trees of Germany are the themes of song and poetry. All the parks and gardens which are open to the public are as much respected as if guarded by soldiers. A child is taught from its youth to revere the forest. "The Cedars of Lebanon that bowed their heads in ancient Palestine so deeply impressed the people with their solemn grandeur and stately magnificence that their names were used as figures of speech in all the writing of that day." The ancient Egyptians had a peculiar reverence for trees, which led them to consecrate the oak to Jupiter; the olive to Minerva, and the laurel to Apollo; this was but the natural expression of the religious awe they felt for these monuments of nature's care. We believe a love for the beautiful to be one of the elements of civilization; and yet these pagans showed a greater appreciation of the beauties of the forest than we do, with our advanced civilization. Love of gain so often seems to crowd out love for the esthetic; and instead of consecrating

our forests to Deities, or even *protecting* them, we *desecrate* and lay waste that which nature has been centuries in bringing to a perfection of beauty.

"The groves were God's first temples, ere man learned to hew the shaft and lay the architrave."

It was the poet spirit of reverence for trees that made the early fathers worship in the groves of Brittany and Germany.

It is that same spirit that has made Chautauqua and our own Lakeside such successes.

Our Methodist brethren recognize it annually as they pitch their tents under the trees for the purpose of worshipping God.

We instinctively associate cultivation of surroundings with cultivation of mind. When we see well-kept lawns, shady walks, grounds made beautiful with ornamental trees and flowering plants, is it not an argument in favor of the mind that conceived and the hand that executed?

Says Washington Irving: "There is something simple and pure in a taste for trees. It argues a gentle nature to have this strong friendship for the hardy sons of the forest."

Let us now consider the climatic effect of forests. The extent of influence which forests exert over climate, rainfall and sanitary conditions of a country has been and is now a mooted question with those thinkers who have made this a study. But all agree that climate is affected by humidity of atmosphere, and this is attained by the direct agency of the forest. The accumulation of moss and leaf mold in forests forms a soft, porous bed, which absorbs like a sponge the rainfall, feeding slowly the rivulets and springs, whereas in mountainous, treeless tracts the surface is rain-washed, and the accumulating torrent, carrying worthless debris to the plains below, inflicts great damage, as has been the case in France. The diminished evaporation caused by the moisture being held by the spongy soil produces a cool-air current, which, meeting with the lower strata of rain clouds, produces in turn condensation, and this, rainfall. This is one of the theories advanced which commends itself to our reason; but scientists and foresters differ somewhat

as to whether forests cause more rain to fall, although the proponderance of opinion is decidedly on the side that it does; this has been the experience of foresters in Europe, particularly.

However the case may be, there is but one opinion as to its being the mother of springs.

It holds back the great snows of winter, prevents torrents and destructive freshets, and feeds gradually from its retained moisture and countless springs the rivers and brooks in the summer, thereby preventing drouths. Agricultural development is dependent on humidity of soil and a necessary supply of moisture, both of which, as we have shown, are promoted and influenced by the forests. In ancient times, Palestine and Persia were noted for their fertility, but with the disappearance of their forests the whole face of the country has been changed, as well as the character of the population, to a very great extent. A few weeks since, Dr. Heinrich Mayr, a forest officer of the Bavarian government and lecturer on Sylvaculture in the University of Munich, passed through New York city on an important mission to Japan, where he is to give instruction in the science and practice of forestry, as known in the best schools of Europe, and to direct to a certain extent the forest policy of the empire. Two years ago he crossed the United States through the lake region and the northwest, to Oregon, and now he proposes to study the southern forests, going through the Allegheny region and crossing Texas to California. This is in preparation for a report to his government on American forests.

Replies to some of the enquiries of the ever-present reporter in New York city were as follows: When asked if Japan had suffered any of those physical disasters which have followed the deforesting of high lands in other countries, Dr. Mayr said. "Oh yes. This preparation for a timber supply is only one reason for the present interest in forestry in Japan. The growth of railroads, opening up new markets for forest products and means of transporting them, is an immediate occasion for this sharp looking after the resources by a long-sighted, business people. But the

country is already suffering where the wood has been stripped from the high slopes. The calamity is not so serious as in other parts of the world, in southeastern France, for instance, where millions are expended every year in an almost hopeless struggle with devastating floods."

Our own country furnishes such abundant illustrations of the deleterious effects following the cutting away of forests, that we do not need go to foreign countries for confirmation of our theory. Mr. David Thompson, of Cincinnati, said to the American Association for the Advancement of Science, in 1881: "It is not unusual to find, in many localities, the beds of what were once important mill-streams, waterless, except when filled by sudden freshets; and in Ohio, certain streams emptying into the lake, which were once declared navigable, will not float a canoe."

Prof. Newberry, in his *Geology of Ohio*, states that the Ohio river has been getting lower and lower in dry seasons for many years. The diminution in the minimum flow of the Schuylkill is well known and often cited. The total decrease in sixty-five years (1816-1881) was sixty-six per cent., an average of over one per cent. per annum.

Cassius M. Clay, of Kentucky, gives an account of the effects of his own forest destruction. His father built a large mill; the stream on which it stood was perennial, and the mill ground the wheat grown upon the farm. When Mr. Clay, Jr., came into his estate, he girdled and killed all the trees on the hills, with a view to increasing his pasture range. The effects were very different from what he anticipated. The stream dried up and the mill became useless. It also became useless from another cause, and that was the failure of the wheat crop. Mr. Clay says the climate in his part of Kentucky has materially changed, owing to the extensive destruction of forests. Late frost, drouth and wind have become very injurious to vegetation. The returns in agriculture have become more uncertain than formerly, and some crops fail altogether.

Geo. Allison, of Canada, says: "I am satisfied that the sudden climatic changes, now so much more injurious to

Canadian agriculture than formerly, are largely due to the destruction of our forests."

Geo. P. Marsh says: "As the forests are destroyed, the springs which flowed from the woods, and consequently the great water courses fed by them, diminish both in number and volume.

"This fact is so familiar in the American states and the British Provinces, that there are few old residents of the interior in those districts who are not able to testify to its truth as a matter of personal observation. My own recollection suggests to me many instances of this sort, and I remember one case where a small mountain spring, which disappeared after the clearing of the ground where it rose, was recovered about twenty years ago, by simply allowing the bushes and young trees to grow up on a rocky knoll, not more than half an acre in extent, immediately above the spring. The ground was hardly shaded before the water reappeared, and it has ever since continued to flow without interruption.

"The hills in the Atlantic states formerly abounded in springs and brooks, but in many parts of these states which were cleared a generation or two ago, the hill pastures now suffer severely from drouth and in dry seasons furnish to cattle neither grass nor water." The reports of the Superintendent of Public Works, of New York, make yearly appeals for the adoption of measures to replenish the constantly diminishing supply of water for the state canals, and assert that observation shows the waters in the upper Hudson and its tributary streams to be failing.

Some years since a President of the New York State Agricultural Society in an address before that body said: "Has the wholesale destruction of forests nothing to do with this sweeping over and beyond us of the heavy rain clouds? Can we continue to sweep away all our growth of timber in every arable district and even denude our rocky hill sides and mountain tops without incurring the penalty?

"Can we expect to escape the universal law that has produced an uniform result in all countries and in all ages?

Wherever this law has been violated, sooner or later the lands have become desolate and the cities have perished."

Not many years ago a million of dollars or more of property was destroyed at Rochester, N. Y., by a flood, unquestionably occasioned by the extensive clearings around the sources of the Genesee river.

Hon. Warren Higby, of New York city, and president of of the American Forestry Congress, said in his address before the congress, at Boston: "There is abundant evidence of the effects of cutting off the forests. In central New York, streams that thirty or forty years ago kept the ponds well filled for the saw mill and grist mill and furnished a never failing supply of running water for the farm, are now dry in summer, with the exception of here and there a stagnant pool. Yet with the warm rains of spring and the melting snows, the streams overflow their banks, the swift waters carry away fences, bridges and embankments. The extremes of heat and cold are greater, and the drouths in summer and floods in spring time are more frequent and destructive. It is not difficult for men who know the effects of cutting the timber from small areas around the headwaters of small streams to understand why summer navigation on the Mississippi, the Missouri and Ohio has become difficult and at times impossible; or why the Hudson or the Connecticut are much lower in summer and higher in spring time than in former years." The partial deforestation of the Adirondack region had affected the flow of the Hudson to such an extent that New York became frightened for fear it might ruin navigation, and in consequence that *great metropolis* lose its prestige as the largest port of entry on the western continent. This alarm resulted in the organization by the state legislature of a forestry board, and of the setting aside of 715,267 acres on the Adirondacks, which is a great watershed of the Hudson and other streams.

Wisconsin is in very much the same condition the Empire State was a few years ago. Originally New York had a larger percentage of forests than the Badger State, but the lumbermen and settlers have wielded the ax to such an extent, the effect is clearly shown in the low waters of the

rivers and brooks. If New York with a naturally moist climate, has already begun to suffer from the destruction of her forests, should it not be a caution to us, lest in a few years more of such reckless sacrifice of our forests, our condition be worse than that of New York. We have the nucleus for doing the same thing as New York as to a forestry reservation. Senator Tom Scott introduced into the legislature, in 1878, a bill which became a law, setting aside 50,613.14 acres of state land in what is now Oneida county.

The locality where these lands are situated is in what is known as the "region of the lakes." Nowhere on this continent will you find so many lakes clustered together as on this great watershed. This great divide between the "great unsalted sea," whose waters find their outlet to the ocean through the St. Lawrence, and the waters of the rivers that through the Father of Rivers, empty into the Gulf of Mexico, is the eighth wonder of the world. It is about fifty miles wide and one hundred and fifty miles in length, and will at some future day assume an importance in the geographical and physical features of the state now but little suspected. Senator Scott's idea was that Uncle Sam could be made to see the great necessity of keeping the timber from being cut on this watershed, and consequently donate them to Wisconsin to be kept with the state park lands as a safety guard. I do not think the matter was ever urged at Washington, and so nothing was done by congress.

Notwithstanding many of the United States government lands on this divide have been sold since then, still there are hundreds of thousands of acres covered with timber left, which will be reserved, if the bills which have been introduced by Senator Hale, and Mr. White, of New York, become a law.

"The forest is nature's sanitarium," and in its destruction we are throwing open a door through which must walk pestilence, disease and death, just so sure as cause is followed by effect. Even in ancient times this significance was vaguely realized when Critias spoke of "the sickness of the country" in consequence of deforestation. Examples from all parts of the world witness the axiom that no country

can be healthy, wealthy or in any permanent and proper sense prosperous without a due and orderly proportion of woodlands. Prof. Shaler claims this is a vital question, touching the very possibility of human existence. The agency of the forest in equalizing moisture, destroying malaria, promoting health, absorbing the superabundance of carbonic acid gas thrown off by animal respiration, and in place furnishing oxygen, which to man is life-giving, all this is too well known and understood to need argument or illustration.

As to the hygienic value of forests, Mr. Elizur Wright, of Boston, says: "Keeping up a fit proportion of forests to arable land is the prime condition of human health. If the trees go, men must decay. Who ever works for the forest works for the happiness and permanence of our civilization. A tree may be an obstruction, but it is never useless. Now is the time to work if we are to be blessed and not cursed by the people of the twentieth and twenty-first centuries. The nation that neglects its forests is surely destined to ruin."

Wisconsin is the healthiest state in the union,—by the last census report the proportion of deaths is only-ninety-four out of every ten thousand, but with the rapid rate we are deforesting we may not look for so creditable a showing from the next census report.

From what I have shown by statistics and observations you will see that the United States has nearly reached the danger line, and Wisconsin is also rushing toward the same point at railroad speed. During the past ten years there have been Forestry Conventions held by national and state organizations, and the matter thoroughly discussed, and by agricultural societies also. Resolutions have been passed and memorials to congress, requesting that body to take some action. If congress fails to do anything for the protection of our forests, it certainly will not be for the want of warnings; newspapers have urged the importance of congressional action in the interest of our forest preservation, claiming that it is not a local but a continental matter. The Chicago Tribune closes up an able editorial on the rapid disappearance of our forests and the great danger of

a forest famine in these words: "If these be facts the failure of our government to act will be criminal. But congress will not act if it feels no pressure from the people. If the rest of the community have not the energy to move, won't Grand Master Workman Powderly, of the Knights of Labor, issue another circular directing his members to write to Representatives and Senators requiring them to act for the preservation of the timber supply, as they are now calling on them to vote for labor bills?"

Prof. Roberts, of Cornell University, advises that the government use a portion of the surplus revenue in preserving and fostering timber growth.

I am happy to be able to state that finally that body has awakened from its Rip Van Winkle sleep, for it is high time decisive action be taken. I hold in my hand a bill prepared by the American Forestry Congress, introduced by Senator Hale, the provisions of which are: To withdraw from entry all public lands of the United States more valuable for their timber than for agricultural purposes. It also provides for the appointment of a commissioner of forests, and four assistant commissioners, whose duty it shall be to classify forest and timber lands, and to determine what portion of those lands shall be permanently retained as forest reserves for climatic and other economic and public reasons, and what portion may be disposed of; lands which are more valuable for agricultural purposes shall be restored to homestead entry and sale.

Senator Hale, of Maine, representing the old "Pine Tree State"—a state that once had magnificent forests of pine, and now has nothing left of that wood but a few saplings—well knows that at the present rate of consumption, supplemented by the ravages of fires and the wanton sacrifice of small timber, but a comparatively few years will suffice to exhaust the forests of the United States.

Both the Madison Democrat and the St. Paul Pioneer Press, in strong editorials, substantially indorse Senator Hale's bill; in fact, I have yet to learn of a paper that opposes.

In my humble opinion, there is no necessity of Uncle

Sam selling another acre of forest, as there are plenty of other agricultural lands. Certainly the proceeds of sales are not required in the public treasury, for it now contains so large a surplus that it is a great problem with the two leading political parties as to how it shall be disposed of. I have corresponded during the past two months with experts and officials of many of the states, and, without a single exception, all agree that congress should take the matter in hand without delay.

Mr. White, member of the House of Representatives from New York, has introduced a similar bill, and unless red tape and the greed of speculators and lumbermen prevent, I am strongly in hopes some steps will be taken to prevent our experience from being that of France and other nations, who by allowing a general denudation of their forests, learned a lesson which cost them hundreds of thousands of lives, and millions, yea billions, of treasures.

It would be well if we followed Sir Walter Scott's instruction to his forester. "Be aye stickin' in a tree, it will be growin' when ye are sleepin'." One of the difficulties which forestry has to contend with in widening its sphere of usefulness is the scarcity of men acquainted with its practical details. The ignorance of Sylvaculture in this country is well nigh universal. We should have schools of Forestry; there are none in this country except one in connection with the University of southern California at Los Angeles. Nor are there any regularly appointed Chairs of Forestry in any of the Colleges or Universities.

In some of the Agricultural Colleges, the Professor of Botany has added to his title, "and Forestry;" but instruction, if given at all, is only incidental. I quote the following upon this subject from the annual report for 1885 of the United States Division of Forestry: "No Agricultural College at this day should be regarded as doing its proper work, or as worthy the name it bears, which has not a Chair for instruction in Forestry, in connection with which systematic observations in regard to the influence of forests on climate are made." It has been truly said "the science of Forestry in America is yet in its swaddling clothes." It is,

perhaps, a risk to assume that its toilet is so far made as that. It may be of interest to know what action foreign nations, and some of the states of the American Union, have taken in the interests of Forestry.

After the evils arising from deforestation became so evident in Europe, active and effective measures were put in operation for the preservation of their forests and extending the area by planting, and to this end every means known to them employed to accomplish it. The German Empire, Austria, Switzerland, France, Italy, Spain, Portugal, Russia and Sweden, adopted methods best suited to their individual needs to re-forest waste places, protect remaining forests and encourage new planting and tree culture.

Schools of forestry, forest institutes, forest engineering, sylviculture and every branch of the science has been instituted, in many cases by royal decree, and in every instance at the support of the government. The zeal of the German government in behalf of its forests and groves is carried to the degree of forbidding the owners of trees to cut them down without its consent. The ancient Germans framed laws for marking the trees to be felled, and in certain cases punished with death infractions of these rules. India has the finest forestry system in the world. In Europe there are thirty-five forestry schools—some of them in Germany are over one hundred years old. In the library of one at Tharand, in Saxony, are 10,000 volumes of literature of forestry. It has also a chemical laboratory and a large cabinet of woods. When a student graduates from that institution he is in every sense of the word a scientifically-educated forester. France has a school of forestry at Nancy, established for the sole purpose of preparing agents for the state forestry service. During the last fifty years it has educated 1,000 persons for the special work.

Several of the states have become aroused to the importance of preserving and increasing the area of their forests, and have taken decided action. Nebraska has the credit of the inauguration of Arbor Day in 1874, by a resolution of their State Board of Agriculture, and twelve million trees were planted during that year. There are over 100,000 acres

of planted forest in that state. In 1885, Nebraska had competitive Arbor Day entries — premiums to be given for the greater number of trees planted on that day, as follows:

\$25.00 for the greater number of hardwood.

\$50.00 for the greater number of all kinds.

\$50.00 for the greater number of cuttings.

In Iowa, Arbor Day was adopted in 1874 by the State Horticultural Society. Since then it has been established by legislative action. In Minnesota it was proclaimed by the State Forestry Association in 1876, and 1,500,000 trees were reported as planted that year. Michigan, Ohio, New Jersey, Massachusetts, New Hampshire, New York, Maine, Rhode Island, Connecticut, Pennsylvania, Florida, Vermont, Georgia, Colorado and Indiana have also adopted Arbor Day.

The state of New York instituted a Forest Commission in 1885 and appropriated \$32,500 for the work of the same. The state of California has recently created a Forest Commission. Ohio has a Forest Bureau, Colorado a Forest Commission, and there are quite a number of Forestry Associations where this vital question is being thoroughly discussed.

A Forestry Convention was held but two weeks since in our neighboring state of Michigan, at which their governor presided, and important topics were discussed by prominent and scientific men from all parts of the country.

At a recent convention of the Minnesota State Horticultural Society a very able address was delivered by Hon. S. M. Owen, editor of *The Farm, Stock and Home*, on "Forests and Mines." The subject was thoroughly discussed and created more enthusiasm than any other part of the convention proceedings. So impressed was the society with the importance of the subject that it ordered a large number of copies for distribution and provided for sending a copy to each member of congress. I have not time to give a synopsis of Mr. Owen's timely address, but will simply make one short quotation which I most heartily endorse. He says:

"It does indeed seem incredible that this country, yet in its infancy — as the lives of nations are estimated — and which was endowed with a wealth of timber regarded as

absolutely inexhaustible, should enter the front door of the second century of its life to be there confronted with the most melancholy of all problems, that of an insufficient timber supply — a timber area so narrowed that processions of climatic calamities are almost constantly on the march by reason of the narrowness.”

The preservation of forests, not their planting, is the all-important question in Wisconsin; but even here in the southern portion of our state trees should be planted in many places for wind-breaks, if for no other purpose. In a prairie and open country, the necessity for trees as a wind-break is imperative. Coal can be substituted for fuel in place of wood — rather expensive, though, at \$10 per ton — but for protection against the burning, scorching winds of summer, that parch vegetation like a simoon, and the freezing, furious blizzard of winter, there is no substitute. Trees for a wind-break are a necessity.

Hon. J. B. Treat, late president of the Green County Agricultural Fair, in a recent letter, says:

“Farmers make great mistakes in not setting out more shade trees in their yards and especially about their feed yards and stables. One of our best cattle raisers tried the experiment in feeding large three-year old steers. He fed twenty in the grove without shelter and twenty he stabled — the ones in the grove improved the best.”

In the reign of Henry VIII. we find old Thomas Tusser complaining that men were more studious to cut down trees than to plant them. This is as true to-day as it was in the 16th century. The people of Wisconsin have not arrived at that stage of philanthropy that tree-planting or reforestation will be carried out to any very great extent unless they can be convinced that it will pay. The direct profits of tree planting may be easily and conclusively shown to be 10 to 20 per cent. per annum. It is as profitable as any crop of farm or garden, but has the one objection, insurmountable to most people, of tying up capital without returns for many years. We are all well aware that this utilitarian generation demands quick and large cash dividends.

I know it is not an easy matter to persuade our farmers

of the necessity of tree-planting, but if they can be convinced also that there is profit in it, then many will take hold, notwithstanding the profits are slow in being realized. From my own experience and information from different sources, I have gathered the following facts respecting the growth of certain varieties of timber:

Black walnut will grow 12 to 15 inches in diameter in 20 years.

Oak will grow 1 foot in diameter in 48 to 96 years.

Soft maple will grow 1 foot in diameter in 12 to 15 years.

Hard maple will grow 1 foot in diameter in 40 to 50 years.

Elm will grow 1 foot in diameter in 30 to 40 years.

Pine will grow 1 foot in diameter in 30 to 85 years.

Basswood will grow 1 foot in diameter in 30 to 50 years.

White willow will grow 1½ feet in diameter in 12 years.

Lombardy poplar will grow 1 foot in diameter in 14 years.

Butternut will grow 10 to 12 inches in diameter in 20 years.

These figures are only approximate; rapidity of growth is so dependent on climate, cultivation, density of forest, etc., that no arbitrary rule can be given.

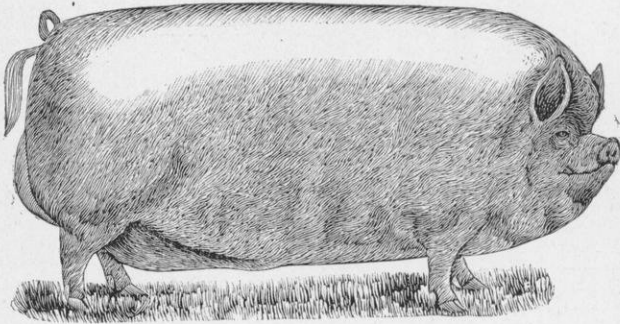
In conclusion let me say, to the farmers — who are usually conservative — must we finally look for the preservation of our forests. When they realize and understand the importance of reforestation and improvement of existing forests then we may feel forestry is on a safe foundation. Consequently I am glad that so large a percentage (38 per cent.) of the total 185,794,219 acres area of forest land is now held by farmers.

The increasing demand and value of timber will be a great temptation to denude your woodlands, but it will be a policy akin to the killing the goose that lays the golden egg.

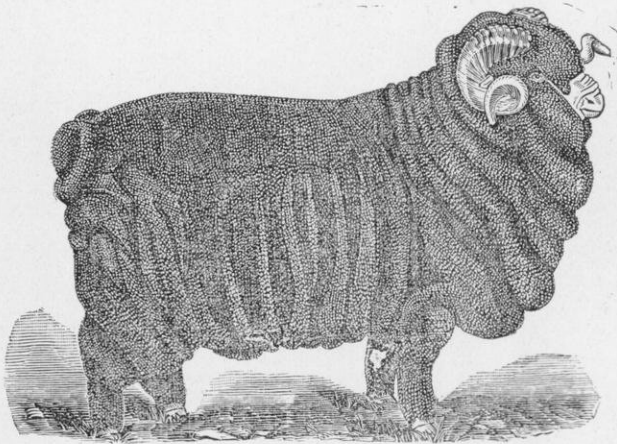
Better follow the German plan of whenever a tree is cut, make good the vacancy by planting another.

Begging your pardon, ladies and gentlemen, for occupying so much of your valuable time, I will close with the benediction of Mohammed, the prophet,

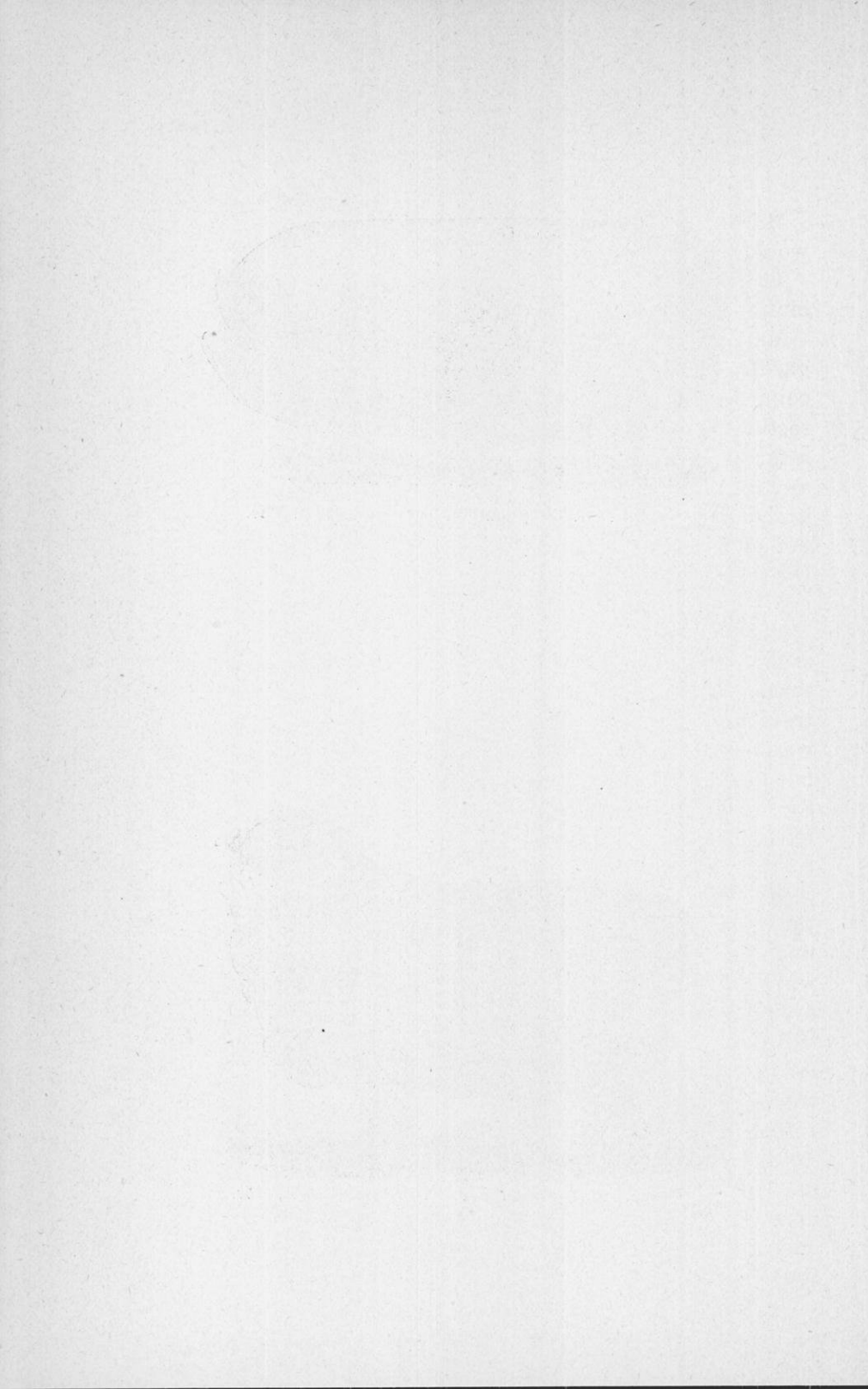
“Blessed is the man who planteth a tree.”



Suffolk Boar — Owned by J. D. CASS, Beloit, Wis.



"DEFIANCE" — Owned by J. H. PITCHER, Eagle, Wis.



DISCUSSION.

Mr. Anderson — Before the discussion on this paper, I would like to offer a resolution.

The Chairman — That is referred to the committee on resolutions.

Mr. Cole, of Waterloo — I would like to state one fact regarding the scarcity of timber in the eastern part of this county. I know men there that have paid taxes on quarter sections of land for the last forty-five years, expecting to get return from that land; these men came there in their youth and died holding it; and now their children are giving the timber grown on that land to have it grubbed out, and it is not only done there, it is done over in Dunn county and Dodge county.

A Member — And it is done in Columbia county.

Mr. Anderson — I agree with the gentleman who last spoke. When I came to Wisconsin twenty-five or twenty-seven years ago, I was requested by many men to plant out trees largely. I did plant out hundreds of trees, but they wanted me to go into tree planting for forestry purposes, but I said: "I can go and buy land with young timber on it for much less than it will cost me to buy the trees, much less, plant them. To-day there is much more timber in this country than when I came here. We are going to have something else to build fences with in place of timber; something else to build houses with instead of timber. We will finally have our houses fire-proof, the roofs and outside walls will be metallic. Of course, I believe it is right for every farmer to plant trees around his house and grounds if for no other purpose than for the shelter of his stock and for the beauty of them. I have hundreds and hundreds of trees and have spent a good deal of money in that way, and I feel proud of it. I got them too thick at first, but it is easier to cut them down than it is to wait for them to grow up; but don't be afraid that during your life and your children's lives, it may be, that there is not going to be timber enough in Wisconsin to supply all needs; because so fast as timber becomes too high, something else will take its place.

Paper may be used to build our houses; paper is now used for car wheels and makes a better wheel than iron, and there will be something else to take the place of lumber just as fast as lumber becomes too scarce or too high.

Mr. Henry — If I understood the gentleman who read the paper, rightly, he said that where the timber lands are cleared it creates an unhealthy climate, and that sickness prevailed after the timber was cleared off the lands. I wish to differ with the gentleman with respect to that statement. I lived, in my early years, in western New York. It was a heavily timbered country, and in the early settlement of that country, when it was covered with forest timber, it was infested with fever and ague and chills and fever; and when that land became cleared and cultivated, they had no more of the fever and ague. And it has been the same in Ohio and Indiana, and it has been the same in Wisconsin; in the Rock River woods and in Dodge county and in Jefferson county and in Fond du Lac county, there has been the same result. In 1846 there was one time in going over the road from Watertown to Milwaukee there was not a single house or a single family but said they were sick with chills or intermittent fever or fever and ague, and whenever the land has been cleared and cultivated, we saw no more of that, and I think the gentleman is wrong.

Mr. Toole — It seems to me there are so many good things, so many good points for thought, that we ought not to go off to one side for the little things we think of, in discussing this paper. It seems to me that there are many good points in it. Our members of congress are looking after the interests of forestry; but still, say what we will, there is danger from the rapid diminution of our forests in this state. I don't think that paper and iron and such things are going to come into use as fast as we will need them, and I think we should take a little better care of our forests. I would like to know from Senator Anderson, if he is still present, if any steps are being taken in this state to guard against forest fires. In New York something has been done that has been effective, and I think it is our duty to take care of what we have got. It will be many years before the young

timber that is growing up will be large enough to be used in place of that which is going. I would like to know from the people of this state who have tried the catalpa, whether that class of timber is hard enough and durable enough to depend on it for fence posts; for we need to cultivate something to put our wire on.

A Member — We will have iron now.

Mr. Burrows — If I understood what these two other gentlemen said, they didn't reach my paper. I admit what the Senator says, that there is more timber in the southern part of Wisconsin than there was twenty years ago, and more in Dane county to-day than when I first came to it, thirty-five years ago; that is from the fact that we have fenced it up and the fires have stopped and the timber is growing on the hills and waste places; but I was referring entirely to the north of Wisconsin; there were twenty-five hundred billions of feet cut there this winter, which means five hundred thousand acres cleared off and made waste. Fires are going to burn off for the next twenty years a larger territory annually than Dane county; and yet the gentlemen say there is no fear of cutting down the timber. Let me tell you that figures will not lie, and the percentage of forest is running down so that by the time the next census is taken, instead of Wisconsin having forty-eight per cent. in forest land, she will have less than thirty-five per cent.; and I say, when you get down to a certain percentage or below it, it is not sufficient for the purposes of manufacture, and it ruins the health of the country bad. The gentleman refers to a new country where they have fever and ague, as they had in Wisconsin. How is that caused? Did you ever hear of the Indians having it? It is because of the new land turned up, and it comes from the earth and not from the groves and woods.

A Member — That is right. (Applause.)

Mr. Burrows — The gentleman asked what laws we had. We have got a law, that if a fire is set you can punish a man by fine or put him in jail, but it has never been put into effect.

Mr. Kiser — I do not rise for the purpose of discussing the

timber question by any means. I was raised in the timber country myself and I know some of the hardships and the labor of clearing up a timber farm. I only wish to call attention to a few remarks the gentleman made in regard to emigration to the north of Wisconsin and to the western states. I know that at present I am laboring under a great disadvantage. I lived in Wisconsin twenty years and no man has a higher regard for the people of Wisconsin and for its interests than I have, but I would not give a cent for a man that wouldn't stick up for his own country. I am here from a country which every man in this house is prejudiced against—the territory of Dakota, to which all the storms which pass over this country are laid to.

The remark of the gentleman was, that northern Wisconsin was the place for a man with capital to start with. I have passed through your timber country, gentlemen, and I have seen men who have been there for twenty years, and who have gone in there and built up their little cabins and have lived there until their cabins have been ready to drop to the ground, and had fifteen or twenty acres of land for fifteen or twenty years of hard labor. I want to say, on the other hand, that in the territory of Dakota, and not only Dakota, but all the northwestern prairie land, a man with any energy and any intelligence, any go-ahead in him, can go with three good horses in the spring of the year, and raise his crops that season, raise plenty to live on, and the next season have a hundred acres of land ready for number one hard wheat. I will cite you to my own county, for instance, Spink county, where I went six years ago, where there was scarcely a mark of a plow. I moved my goods twenty-five miles from the railroad, and in all that distance I saw broken, perhaps, a few little streaks of land by some tree-claim man, just enough to cover the law. Now I have a station four miles on the north, another five miles on the west, another five miles on the north, and another ten on the south, and we have marketed this year about 600,000 bushels of number one hard wheat. Now will the gentleman show me where that has ever been done in a timber country?

Mr. Burrows — I had the pleasure once of passing through Dakota. I think I went through on the first train that went through it on the Northern Pacific, and as I came back, and it was only in September, the snow was falling, the thermometer was about ten above zero, there was three or four inches of snow on the ground and thousands of emigrants were being landed right there on the track with not even a depot to cover them. I didn't care for the men, but there were women with babies in their arms and children, with no place to go to. Right in September and the winter had already commenced. After another year I was up there and I saw them living in small frame houses or sod cabins. What can they do? They go there with a hundred or a hundred and twenty dollars, they can work only three months in the year, they have, possibly, got in a crop of wheat and harvested it and then what can they do until the next spring, but gather around by the kitchen stove? Nothing. In Wisconsin what can they do? There is no day in the whole year but what you can have work; you can work in the woods at logging and get your cash for it all winter, or you can work in the lumber mills. For emigration, give me North Wisconsin beyond any of those cheerless wastes. (Applause.)

Mr. Kiser — The gentleman speaks of a scene on the Northern Pacific; remember we have got a territory five hundred miles in length and the southern part stands in a line with the southern part of Wisconsin; our climate is as good there as in Wisconsin or anywhere else.

A Member — Tell us about the blizzards. (Laughter.)

Mr. Kiser — Oh! well, you don't want to hear anything about that. There is no doubt but that a great many men have gone to that country when they ought not to have done so, gone through some emigrant aid society, or something of that kind, some inducement held out to them to go in the fall when they ought not to go; but you can go there in the spring of the year and commence growing your crop and have sufficient to winter on; and the first winter I don't care whether you work all winter or not; if you have raised enough in the summer you don't need to grub and

sweat over stumps all winter. (Laughter.) I would like to ask the gentleman now, at the rate they are cutting off this timber in the north, how long it will be before these blizzards that come down from Minnesota and Dakota, will have a free way across Wisconsin.

Mr. Stevens — Just tell us in regard to the time spring opens in Dakota, if you please.

Mr. Kizer — I went in the summer of 1881 and next February I had my cultivator at work on the land. We worked three or four days in February and the first day of April we commenced sowing our wheat and I have never, in the last six years, commenced sowing later than the first day of April. In the fall for three or four years, we have stopped plowing about the 10th or 11th of November. That is about the time we freeze up. We have frost in the fall as a rule, some frost, the last days of August and the first days of September. Last year and this year we have had a fine crop of corn in Dakota as anywhere else; the varieties that ripen the first of September.

Mr. Stevens — With your experience, have you succeeded as well with early wheat in Dakota as in Wisconsin?

Mr. Kizer — Yes, sir. We commenced work as early in Dakota as in Wisconsin.

Mr. Anderson — I would like to tell an anecdote on my friend Kizer. I sent him a newspaper published in Ohio and I marked it; the paper said there was a farmer living in Dakota and he wanted to go to the barn and he went and kissed his wife and children all good-bye (Laughter) and he said: "Now, wife, if I don't return don't let any of the children go out until spring; and there is thirty-seven dollars and a half put in that bureau drawer there, and you take that and take the children back to Ohio; that is God's country." (Applause and laughter.)

RECESS.

Two o'clock P. M.

Mr. Adams — Two gentlemen of the committee on resolutions have left the city, and I wish the chair would appoint somebody in their places.

The Chairman—I will appoint John Whittet and C. R. Beach.

The Chairman—There is a war of theories about the merits of the different breed of cattle in the State of Wisconsin and I have thought that we ought to induce the experimental stations to send out men on the farms of the different farmers in the state to test cows of the different breeds; I have thought of the thing, and that seems to be the only practicable way by which we can get at some reliable data from which to judge of the merits of the different breeds. It is a very easy matter for me to say that my cows will give a certain amount of butter every week, but it depends as much on food and handling as it does, in my opinion, upon breed; and I may not be an honest man; so it is a question in my mind whether we should not have the experimental station get these data for the farmers in the state and then, after these experiments have been made, if the proof is that any one breed or any one line of handling is superior to the other, then we have the full advantage of it. As it is, it seems to me we are all at sea.

Prof. Henry—I would like to say a word on this important topic. The testing of cows and the making of accurate records are something we must do if we are going to have any considerable advantage in our knowledge of the possibilities of the dairy cow. I think we are getting a good deal of information and we are advancing; but to make the kind of advancement we want and to accelerate our advancement, we ought to have some of these tests. The experimental station induced the State Agricultural Society year before last, to have a test at the State Fair at Milwaukee. The test was partially successful so far as the experimental station's work was concerned and partially unsuccessful. I don't think,—and I say this after several years' careful study of the problem,—I don't think the state fair is a good place to test cattle; I don't think any man could take a cow and lead her into a freight car and have her knocked about for a greater or less time, unloaded at the fair and examined by crowds of people hurrying by, fed upon new and strange food often by new and strange feed-

ers, and expect that cow to do anything like her normal amount. Now, if that be true, and I will not stop to argue it, but I will say that I have come to that conclusion after a good deal of thought, I don't believe we can do it at the fair with any degree of satisfaction.

Next to that, and the only way, it seems to me, is to test the cows upon the farms where they are habituated. I don't believe the experimental station farm is the place to go to put the cow there under new treatment, cared for by new attendants. I don't believe that is a fair test. If we could bring all the breeds at one time, it would be fair, but to bring one cow now, another come later — and that is about the way it would go — it would hardly be a fair test all round; I have given up that idea. But I do believe that testing in her own stable, under her own usual care, with her own usual food is the way; and the experimental station could co-operate. Have persons appointed by the State Agricultural Society, and by the advocates of the different breeds; the Short-horn breeders, their society could appoint a tester who could work under them; the Jersey man could have one and the other breeds likewise; then the experiment station could send a man to work with them. For instance, Mr. Arnold believes he has a Short-horn that could make fourteen pounds of butter a week. Let Mr. Arnold write to the Short-horn society that if they would send a tester up there, the experimental station would send a man along, and the milk would be put into cans and the cans that held the milk would be sealed with the tester's seal — a cord put around the can in both directions and then sealed with wax and the impression of the tester's seal not broken until he breaks it with his own hand — he stands by the cow and watches — not milking himself, but the cow is attended by her own attendant and fed as Mr. Arnold wishes, but the food is weighed so if he feed an excessive amount it will be noted, and if the cow should do a wonderful thing on little feed, it will be noted. Let him feed as he likes, but the facts get to the public.

The result to the experimental station would be this: after the butter from that cow was put into scales and weighed,

the chemist would take a sample of it, having previously had a sample of the milk, and he would find out by his analysis if that was genuine honest butter, and not curds and whey and everything in fact mixed with it and called butter. They talk about unsalted butter and unworked butter. You and I know that that may hold up to fifty or seventy-five per cent. of water in it, and any man could easily put a little rennet in and cause a lot of curd and have the whole thing turned into a butter bowl and call it unworked butter. Now, if the chemist at the experimental station analyzes the milk from the cow after it is weighed and analyzes the butter after it is weighed, he can tell whether the churn got all the butter out of it. And if the churn didn't do the cow justice, there is the fat in the milk to do the cow justice. The Jersey butter club have held that in all tests made in the future, the butter shall be analyzed as well as the milk. Now, we would be glad to co-operate with you; and under the stimulus given us by the government we have some funds, and I am sure the regents would gladly undergo the expense necessary to have a skilled man put there, not to take the charge of it, but to co-operate with your societies; and everything should be made under a sworn statement, and, it seems to me, in that way you would accomplish more than you can by quarreling and reiterating for a hundred years. If you have got any good cows bring them out and let them be tested. The man that tells us about what his little mare can do, but is afraid to put her on the race track because somebody will hold a stop watch there, can blow for years; but let him put his mare on the track and let us time her, and we will know how fast she can go, and he has to put up or shut up, as the saying is; and we have got to put up or shut up on this milk question.

Mr. Wilcox— I heartily approve of this suggestion; I like it and I would ask if we could go that far with it, can we not extend the application of the principle so far as to embrace the different kinds of farm products and perhaps to establish three or four principal experimental stations in different parts of the state to test them in different soils as well as with respect to the climate? I think something in

that direction can be done if the funds will admit; to enable us to determine the best grades of wheat, oats, etc., many are confused to know what is the best to sow and plant as well as what kind of cows they want.

Mr. Fish, of Reedsburg—It seems to me that if this test of cows should be made, it ought to be done at one particular point; the whole lot of animals should be brought together at one particular point and their treatment in every respect, should be exactly alike, and they should be kept there months if necessary, in order that the test be perfectly satisfactory and all treated by the same hands and by the same process throughout, otherwise, it would not seem to me that you could get a satisfactory test.

The Chairman—I simply throw out this suggestion, and if you think it is worth while to draft any resolutions covering it, we will have the committee consider them and discuss them at some other time.

HOW SHALL WE REALIZE MORE FROM OUR FEEDING STUFFS.

BY C. R. BEACH, WHITEWATER.

Two friends who had made their fortunes in the city, were planning to retire upon adjoining farms in the country.

Said the one, "If we do, we must farm so as to make money or we shall not be contented."

"We must in the first place grow crops at less cost than they will sell for in market, and then we must feed them on the farm so that we shall realize more than market price and thus make two profits."

That man compressed into those two sentences the whole science of successful farming.

Thanks to the inventors of labor-saving machinery, the farmers of Wisconsin, as a class, are raising crops at less cost than their average selling price, and could they all be sold directly after harvest, they would in most cases pay a handsome margin over interest on capital and labor expended.

But when we come to feed these crops on the farm, as every good farmer feels compelled to do, in order to maintain the fertility of his land instead of realizing an additional profit by feeding them, we often find the balance on the wrong side of the ledger (that is provided we keep one).

Their value has somehow shrunk away and disappeared. Too many of us under our present system of feeding, support our cattle from the farm, rather than make the cattle support us.

We are like the man who when asked what business he followed, said he was keeping a nigger boarding house in New York city, on "fifth Av.," and instead of his boarders paying him, he had to pay them.

The number of farmers in Wisconsin who realize an increased value by feeding their farm crops to live stock is comparatively small. It is to this department of our business that we as farmers need to give greater attention, and make it more of a study, for in this direction there is most room for improvement and better pay.

Could we get more out of what we raise we need not raise so much to meet expenses. And could we, as a rule, realize a profit above market price for all our feeding crops, we should in most cases double our income, without adding to the cost of production, and so have less reason to complain of low prices and hard times.

It is this particular branch of our business that I propose to present a few thoughts, and to make a few suggestions.

Not that I expect to say anything that you have not heard before, I only hope to stir you up to better doing.

We all know better than we do. We see the right, our judgment approves of it, but we pursue the wrong, not that we like the wrong way best, but we lack faith in our own ability to keep ourselves out of the ruts should we succeed in getting out.

We are like the man who when drawn as a juror, was told by his neighbor that he would not be allowed to serve, for he did not believe in a *God*, replied, "Yes I do believe in a *God* but not in a *living God*."

So we may and do believe in better ways, but somehow

our faith has not the living power that finds expression in action.

But how shall we do different than we are now doing, that we may realize a greater profit from our feeding crops?

The answer to this question to be specific and definite, would have to be varied to the varied surroundings of each individual farmer. I can then only answer in a general way, leaving to you to apply only so much as will fit your individual case.

The first step towards more profitable feeding is better stock. There is hardly a farm in the state upon which may not be found animals that are not kept at a positive loss on account of their quality. While it is not possible that every animal should be as good as the best, yet we should see that every one is a good one. The best is none too good. At a recent public sale a superior cow brought nearly twice the average price. Said a shrewd old farmer: "A man never gets poorer by keeping that kind of stock." But we need not only to keep more good stock, but we should keep those that are best adapted to a specific purpose.

I believe in diversified farming, different soils require different treatment, and upon all cultivated lands rotation of crops is a necessity to profitable production. But the feeding of these crops, is a distinct and separate branch of our business, and the narrower the limits to which we confine ourselves the better the results. I know the proverb about carrying eggs in one basket.

But this is an age of sharp competition. The whole labor of the world outside of farming is being narrowed down not only to some particular branch of business, but also to some fragmentary part of it, by which a given amount of labor is made to produce more if it is not better paid. Every farmer, therefore, should study the adaptation of his farm — its location to market, his own tastes, and previous training, and then make a specialty of that kind of stock his own judgment teaches him is the best for him. No one can tell another what he better do, but once having chosen wisely, our success will be measured by the continued and undivided attention we give to it. Skill comes by long prac-

tice, and to do one thing better than anyone else always pays, and that self reliance, I may say pride, that comes from successful doing, will enable us to do still better, and by confining ourselves to some specialty in feeding, we shall be more likely to choose animals best adapted by their breeding, for the end for which we design them.

The beef producer will not keep Jerseys, nor the dairymen Durhams. It is this application to a specific branch of feeding, that has enabled the dairymen to show better results, I might say profit, from the food consumed.

And while I fully believe that the cow in the hands of the man, who has the facilities, and the taste, and the knowledge, to make her do her best, will always return more for the food than any other domestic animal, yet we can not all be dairymen, and the million and a half of people in Wisconsin, can not live on butter and cheese alone. And there are those who will do better at feeding for beef, raising horses, or growing wool and mutton than by keeping cows.

We should keep in mind the better the animal the better the pay — and the animal that is bred for a specific purpose is most likely to give the best results.

A mouse can not be made an elephant by feeding, nor a race horse developed into a Clydesdale.

One hundred and fifty high grade Durham steers exhibited at the fat stock shows, held in Chicago, at the average age of twenty months old weighed 1,334 pounds, while Prof. Henry, in experiment of making beef from the calves of common cows, made ten of the herd weigh only 1,110 pounds at twenty-five months old. These steers of Prof. Henry's during the two years of their feeding, were surrounded by the best possible conditions, so that we may reasonably presume, that the greater weight in shorter time of the Chicago steers may be attributed more to breed than to feed. Good cattle, bred for the purpose for which they are to be used, is the first requisite for better profit from our feeding crops.

The next requisite for profitable feeding of any animal for any purpose, is that they be supplied with an abundance of pure water of the right temperature easy of access. Other things I may mention can possibly be dispensed with, but

pure water is indispensable. Nor will we wonder when we know that one half the live weight of all domestic animals is water, and the water is the universal solvent, the medium by which organic and inorganic substances that nourish the system, is made available.

Two lots of steers of equal weight were being fed for summer grazing, the one lot were but poorly protected, by a temporary marsh hay shed, and were fed marsh hay and corn in the ear.

The second lot were thoroughly protected in a feeding barn built expressly for the purpose and fed all the tame hay they would eat, and an equal amount of corn with the first lot.

Yet the first lot gained twice as many pounds by actual weight, from November to March, as the second. The marsh hay steers had running water that did not freeze in the feeding yards. The others were driven once a day eighty rods across an open prairie, to a windmill tank where the water was always cold, and often frozen. Every dairyman will tell you that the amount of milk a cow will give depends as much upon the amount of water she drinks as upon the food she eats.

The hair of cattle compelled to drink stagnant and impure water, never has the smooth and glossy look that is so indicative of thrift. In a county where water is so easily procured as in Wisconsin, no one is excusable for not providing it.

Next after pure water I will name comfortable surroundings. The first use that every living animal makes of the food consumed, is to maintain the temperature of the body at 98 degrees.

The amount of food required to do this under the most favorable surroundings constitutes a large per cent. of full ration. If from any cause the food eaten be not sufficient to supply this heat, the fat will be used and then the muscles of the body.

During our long, cold winters the amount of food consumed to counteract the affect of unnecessary exposure, will on many farms more than equal the amount converted, into growth and fat, thus realizing only half the profit,

that might have been obtained, and there are but few farmers that could not "save largely by taking more pains to have every animal in comfortable quarters. In an experiment some years ago in England with forty sheep, twenty of which were fed in the open air and twenty in shed both receiving the same amount of food, those in the shed added to their weight forty pounds each, in the same time that those in the open air added twenty pounds. If in the mild climate of England, so great a benefit was derived from protection, how much should we be benefited during our frigid winters.

Again the most of us, I may say all of us, fail in want of care in preserving our feeding crops in such condition that they will be most palatable and digestible. If not palatable they will not be eaten, and if not digestible they will produce no good results. I think you will all sustain me, when I claim that one-third of the fodder given to our cattle finds its way to the manure pile without being eaten, simply because the cattle did not like it; and what is eaten fails to nourish as it should for the reason that it is undigestible. Over ripe and damaged hay, over ripe straw, cured fodder corn and corn stalks, that have become woody, the leaves turned white and perhaps frost-bitten, contain but a small percent. of the nutritive value they would have possessed had they been harvested at the proper time. And here the silo comes to our aid and offers us a way by which we can preserve our fodder and field corn, our clover, winter rye, millet and oats, almost anything that can be used for cattle food, *at the time*, and in the *condition* in which it will have the greatest feeding value, and preserve it without waste, and in such condition that it will not only be eaten with relish, but also in the condition that it will furnish the greatest possible amount of nourishment. If the silo will do half what is claimed for it (and I believe it will) it will be a god-send to the cattle feeders of Wisconsin. But in the absence of the silo unpalatable food may be run through the cutting machine and mixed with a little meal shorts or bran, and so be made palatable and all be eaten.

If we took more pains to gather our feeding crops in the

state when they contain the most nourishment, and plan wisely in our methods of feeding we can make our cattle eat *all* our hay, stalks, fodder corn and straw without waste and so avail ourselves of all nutritive value they contain.

It seems the height of folly to raise cattle food, only to throw it out into the barn yard, and derive no earthly benefit only to have the privilege of drawing it back into the field again, to aid in raising another crop.

To go over the same thing again; what is wasted is lost, and what is lost is so much taken from the profit we might have realized. But it is not enough that we keep good cattle and surround them with better conditions and take more pains to have their food in the most palatable and digestible condition, but we need to learn better how to combine them that they may produce the specific result for which we feed them without waste.

But no single feeding crop that we raise, put into a silo or even through the cutting boxful alone makes a perfect ration for anything, and if we winter our growing stock on straw alone, and our cows on hay, and our hogs on corn, we need not be surprised if in the spring we have but little to show for our feeding. The mason, who in building the foundation of a house, should pile up his stone in one place, his sand in another, and his lime in still another, would not be more foolish than the feeder who attempts to build up a symmetrical and well developed animal by feeding a single product of his farm.

We need to make the combining of feeding crops a specific study if we would realize an increase profit in feeding them. * * *

We should remember that our domestic animals are the products of artificial conditions, and we confine them to such narrow limits, that they cannot exercise their instinctive preferences in the choice of foods — we choose for them, and the choice, often made in ignorance, fails to give them the best chance for development.

If their needs require bread, and we give them a stone, need we wonder if they fail to pay a profit.

But we are making progress in knowing better how to

feed. Every day we hear farmers talking of milk rations, of proper rations for beef, and proper food for growing animals, of nitrogenous compounds, of the protine in the muscles, and the true proportion of muscle forming food to fat and heat producing. The seed so widely sown by the reports of our experimental station, the talks of Prof. Henry at our farmer's institutes, and the writings of such men as E. W. Stewart and Prof. Almsbury, are beginning to bear fruit. And while their teachings may not have made us all critical in our knowledge, or perfect in our practice, yet this much has been gained.

Every right thinking man is ready to admit that the deductions of science has practical value. The older men from the dull inertia of our minds—the result of long years of hard muscle work may not be able to comprehend, or apply all that is being taught, but we can work in harmony with the spirit of progress. We can at least do this much, we can encourage our boys to avail themselves of the opportunities of obtaining definite and scientific knowledge afforded by the short course of agriculture at our State University, and furnish them the means of doing so.

If we will send the right kind of boys, every dollar expended will return four fold as a money investment, simply in learning better how to feed—besides opening the way by which the boy will become a broader minded man, and a more intelligent and influential citizen.

In the place of twenty-five or thirty in this class, we ought to have four or five hundred. And then the farmers of the state instead of antagonizing the university will begin to be proud of it, and claim that it is our university, and the whole farming interest of Wisconsin will reap practical benefit from it. One more thought and I close this long; rambling, and I presume to you tiresome paper. We shall be much more likely to receive more from our feeding crops if we would study to get the quickest possible returns consistent with a proper growth and development of our farm animals. Spring pigs that can be grown on clover, dairy slops and wheat shorts during the summer, and finished up in the fall with corn, will almost invariably yield a profit on

everything they have eaten, while the spring or summer shoat that is carried over the winter and kept to eat up the next year's corn crop, has run his owner in debt. Said a man when selling light weight hogs at eighteen months old: "It is too bad to sell hogs of that age and not secure more for them. I am poor and need all that I can possibly get for them."

"You will be etenally poor so long as you keep hogs at that age and not make them heavier," was the consolation he secured from the buyer. Steers that can be made fit for market in a year and a half, or two years at the furthest will be much more likely to give satisfactory returns, than if kept another year.

The fat stock shows held in Chicago have been of great value, first, in showing us perfect models of beef animals, but more by teaching the value of early maturity, by proving that the younger the animal the greater the gain from a given amount of food, and also at less cost by the pound. But you will say that this crowding animals to early maturity will necessitate the feeding grain in summer. I answer yes. And if those of us who put up steers late in the fall and feed grain through the winter for spring beef would change our tactics and feed those same steers the same amount of grain the previous summer, when running to pasture, we would find that in the months of November and December our steers had reached greater weight and of better quality than they would if fed until the coming spring in the usual method of treatment, and they would have cost us much less by the pound.

You may say that they would bring less price at that time of year. I am not so sure of that. Low as cattle are in the market this winter, within a month I have seen a record of two sales of yearling steers in Chicago market, one at \$6.00, and one at \$6.25.

Some time ago I saw quoted the sale of thirty-one calves eleven months old at something over eleven hundred dollars; they were sold to the dressed beef butchers at \$4.50 per hundred.

One of the most successful feeders I have ever known, the

late Alexander Bell, of Johnstown, Rock county, in this state, for many years practiced buying his steers late in winter and feeding them grain with his pasture grass, and selling in the early winter, and the growth those steers would make and the pounds they would put on was marvelous. Every good butter dairyman will tell you that the grain fed to his cows when running to grass pays him two prices.

Summer feeding grain with grass and the presence of succulent food in the silo to feed with grain in the winter are two important factors in solving the problem of how to get more out of our feeding crop. Let me recapitulate: Good animals, bred for the specific purpose for which we design them, supplied with pure water and comfortable surroundings, and given palatable food in a digestible condition — intelligently combined in such a manner that they will most economically affect the object at which we aim, in the quickest possible time, will, nine times out of ten, pay a profit above what the feed would have sold for in the open market.

I know we hear much said of the hard lot of the farmer, of his unrequited toil — of the extortion and robbery perpetrated upon him by railroads and banks and other great monopolies. I am not here to disprove these assertions; but I do say that the greatest hindrance to a better state of things will be found in our want of the knowledge and ability to avail ourselves of the possibilities of our business.

The world needs reforming in many directions; but the surest way to make it better is for every man to commence with himself, and in the sphere of his own calling. As yet there are no barriers between him and the sources of his wealth.

The earth is ready to yield large returns to intelligent labor. Every well bred animal on the farm by the very law of its being, is ready and able to co-operate in giving additional value to everything the farm has produced, if we only surround them with the right conditions.

Science stands with outstretched hand, proffering to us

the key that will enable us to make available forces hitherto beyond our reach, and thus clothe us with more power than wizard or magician ever dreamed of possessing.

The boasted superiority of brawn and muscle — of mere brute force — is giving away before the power of high thinking, of wise planning and intelligent doing. And in no department of human endeavor is there a wider or more promising field for the application of scientific knowledge, intelligent forethought, and hard common sense than in converting our feeding crops into these final products. And he will always be the most successful farmer who succeeds best in doing it.

DISCUSSION.

Mr. Adams — The gentleman spoke of a silo. I wish for the information of this audience he would tell us how he built his silo, what it cost, what variety of corn he planted and put in it, how he cultivated it, how he put it in and what the result is.

Mr. Beach — I built it water tight, cellar 22x24, studding a foot wide apart, paper on the outside covered with sheathing, paper on the inside furred out and covered on the inside with sheathing. It is divided into two compartments. It was filled the last week in August or the first two weeks of September with Yankee corn at a cost of four days' work to the acre, cut with a Champion reaper one row at a time. I commenced feeding that silo the 19th day of November, and have enough to last twenty-seven cows until the middle of May or the first of June, from twelve acres of Yankee corn. As conservative a man as Prof. Williamson, estimates one hundred bushels of ears to the acre for that corn, but I think he stretches it. I am feeding that corn to milch cows, with wonderful results; in fact I am almost a crank on silos. I get from twenty-seven to twenty-eight pounds of butter daily from my twenty-three cows, and eighteen pounds of milk make a pound of butter, and the butter is good. It has brought not less than thirty-two cents per pound in the open market.

Mr. Adams — What grain ration do you feed with it?

Mr. Beach — I feed twelve quarts of wheat bran and a very small feed of hay. I have used this kind of Yankee corn for fodder for several years. When I cut this corn it was in a condition that I picked my seed corn ahead of the reaper, but before I got through it was glazed. When I commenced the stalk had not turned white, but it got ripe enough to cut for shocking. It has kept so well that I have not wasted ten baskets full in the whole winter's feeding.

Mr. Briggs, of Elkhorn — Is that ensilage sweet or sour?

Mr. Beach — I call it sweet; some say there is a little acid to it.

A Member — Do you allow the corn to wilt before you put it in the silo?

Mr. Beach — With a Champion reaper, one row at a time, a team can cut an acre an hour. Some parts of the corn wilt and get wet and have to be turned over and dried.

Mr. Adams — How many pounds of ensilage do your cows eat?

Mr. Beach — We commenced with 25 and got them up 40 or 45.

Mr. Boyce — How do you cover this ensilage after it is put in?

Mr. Beach — I cover it with tarred paper and then common boards as tight as I could fit it, sprinkle a little hay on, and then put on plank and fence posts and the like of that.

Mr. Boyce — Does this tarred paper rot when you take it off?

Mr. Beach — It is so it would not hold together; it could not be taken off whole.

Mr. Fish — Do you prefer this Yankee corn to other varieties of ensilage corn?

Mr. Beach — I had some ensilage corn and found it would be so large that it is excessively difficult to handle, and I always prefer the corn to stalks if I can get it.

Mr. Adams — You could have both with the larger corn.

Mr. Fish — You speak of the necessity of pure water and of the right temperature; what temperature would you have water for stock?

Mr. Beach — I cannot speak from experience; I know that cold water chills the animals. I never have felt the necessity of warming water that some have. This winter I tried the Volcano Heater, and after having it in my tank a few days the water began to taste so that my cattle would not drink it. I have a tank with a house over it and banked up thoroughly and covered over on the top and only two drinking places. When the temperature is below zero it is not frozen.

Mr. Fish — Would you consider water kept at earth temperature about right?

Mr. Beach — I cannot say as to that. I know there are a great many things we do not believe that next year we believe, and I think next year I may be as much of a crank on heating water as I am on ensilage now.

Mr. Broughton — Aren't there as many things that we believe now that next year we will not believe?

Mr. Beach — I hope so. (Laughter.)

WHAT THE FARMER SHOULD BE.

BY AARON BROUGHTON, ALBANY.

As the farmer has been in the past, so he is now, and even so he will be in the future; unless he gets more knowledge, or as much wisdom at least, as persons of any other profession.

Some facts — Man is an animal — lower animals are homogeneous, that is they present nearly a uniform character, little variation.

Man is anomalous — presenting a variety of character, under favorable environment, capable of progressive development — man's character is made up from what is *born* in him, and from his education, also he partakes of the nature of his surroundings.

The universe, and all organic and inorganic matter therein, is constantly developing into a better fitness of things that stimulates man toward a higher and better existence.

This is not brought about in a day, but in stages or periods, and in each successive period from primitive man, he is made capable of an increased variety of employment.

Example — Man in the Stone Age, was a savage beast — a hunter like a wolf, lived in a cave, or in a tree, like a monkey, used fire but little, ate flesh raw or roasted, and ate vegetables the same way.

In this age there were no farmers, lawyers, doctors, priests or politicians — muscle was king and tyrant.

The transition from one age into another was almost insensible, like the twilight dawn to the morning sun, so gradual that it stole upon man unawares.

As man approached the bronze age, we find him living in villages surrounded by palisades, or unmortared walls, or in huts built on piles driven in water. In this age farming was very primitive indeed — he cut his grain with a stone sickle, next with one of bronze, planted but little, had some fruit trees, had a few domestic animals, such as the dog, sheep, wild oxen, swine, etc. In this age priests manifest themselves in a compound character, both spiritual and temporal, they were king, lawyer, doctor, and general loafer, also speculator and libertine — wore the best garments — ate the daintiest food, and embraced the fairest women, he labored not — was a parasite — was a gentleman saint, or devil fish by turns, also was sacred in person — all this at the expense of the hunter, mechanic and farmer in those days, all this because of his superior intellectual endowments, the same as it is now-a-days. And at the same time the Druid priesthood was a necessity to curb the savage nature of the industrial man, and prepare him for a higher civilization.

Developing from such beginnings, how could we expect the descendants of such farmers, being anything but helots, fellahs, villains, kyots, serfs and slaves, all through the ages past, and even in a preponderating degree, at the present time.

Next came the age of iron and steel, and with implements made of which, the hunter could subdue the savage beast, till the soil, make his dwelling, his ships, and even make

weapons to kill each other, and in fact civilize each other by force, when persuasion failed. In this age which comes down to the present, the industrial man of which the farmer is chief, still develops muscle force, more than mind force, he was in the past and is now, a hewer of wood, and a drawer of water, not only for himself, but for others that do no hand work, but does brain work only.

For the reason that the farmer was so raised up, and accustomed to allow a professional class to think for him, and to direct his aspirations.

This unbalanced state of things seemed to come to pass, as if by natural selection, by the sin of omission on the part of the farmer, and the sin of commission upon the part of the professionals, because of the farmers' ignorance in matters that should have been to him of the utmost importance, and of his neglect to assert his prerogatives, and by the professionals asserting prerogatives, greater than equal justice should demand, both parties to blame. The equity of this intellectual subjugation is now seriously questioned by the industrial man of all avocations.

Hence the dawning of the thinking age, the age of reason.

An age in which all who do not now see, will soon see, even with half an eye, the shadow of the coming millennium, of man as a thinker.

In this essay for brevity's sake, only conclusions, with little comment are given, exceptions to general rules are not stated, and approximate figures without special exactness are noted.

FARMING COMPARED WITH OTHER OCCUPATIONS.

Farmers may be divided into five classes:

First: The Agriculturist, who buys his farm, and supports it from other occupations, he sets an impossible example for others to follow, and his rules of farm management are good only for his class, he is in number one per cent.

Second: The Legacy Farmer, who has his farm given to him, — has never learned the lesson of poverty, — is a poor economist, a good preacher, but don't know how to practice

what he preaches, — his example and his precepts are like long prayers, like frothy beer, — more wind than wisdom, always coming to the surface, — is irrepressible, cranky to be a leader, apt to take the wrong road, neglects his inheritance, experiments with doubtful materials and devices, blown about by the wind of his own or some others' hifalutin dogmas, and finally the mortgage takes him; he is in number ten per cent.

Third: The Suburban Farmer, he resides adjacent to some town or city, — raises garden truck, small fruits, sells milk, fancy butter or fresh eggs, etc.; he is an expert and windy salesman, his environment is hybrid, half city and half rural, and partakes of the nature of both; he belongs to the city or village church, may be for economic reasons or necessity (to advertise his products). As a politician, he is a farmer with city principles — boodle has no terrors for him; he is often successful financially; he is a law properly only to his class; he is persistent and prolix at the farmers' institutes; his preaching and his precepts partake of his associations; he is a public necessity; his work is so fine as to unfit him as a pattern for other farmers to follow not of his class; he is in number ten per cent.

Fourth: The Tenant Farmer, he has a hard time of it, for in all time past, and at present, the landlord is too smart for him, legislation is against him, indicial despotism has his iron heel upon him, he is a serf, as a voter he is a machine, as a convert he is apt to fall from grace, as an economist he is a failure, the problem of his elevation is hard to solve. Henry George will soon give it up, nevertheless God helps those that help themselves, but when he earnestly desires to get out of the deep rut he is in, and will make it known himself for himself, then, and not till then, will his elevation be accomplished, in number thirty per cent. and increasing so very fast that he will soon be an elephant or a hot pcker in somebody's hands.

Fifth: The Pioneer Farmer, he is self-willed, self-reliant, and very consevative, is a Quaker in industry and economy, he don't intend to be led around by the nose, but often he is, he is a good thinker in his way, he is a success one third of

him, he has the material in him for any undertaking, his perseverance has no limits, his politics and religion are a secondary consideration from necessity, he is the bone and sinew of all nations, he is no more liable to go into rebellion than the trees of the forest, or the cattle in the field, he is the only class of men capable of self-government, and with all his accustomed cuteness, is not aware that the professionals take undue advantage of his peculiarities, as a politician he is frank and honest, but not a wire-worker, he attends to his own business, he don't make the wars, but he often flees from oppression, and he in all the ages has been plundered by both friend foe alike, also has been taxed even to robbery to gratify the unholy ambition of cowards, who send substitutes on dangerous occasions, he is the salt of the earth, he should be the chief institute workers but he is not, he should outnumber all other avocations in congress and state legislatures, but he don't get there, he should demand a public school system that would fit the likes of him for any position under the government, and at the same time not spoil him as a good farmer and business man, but he does not, but if he should so demand, his demands would be granted without question, he is too modest, he don't put on cheek enough, he is in a deep rut, that has been wearing deeper and deeper through all the ages. He knows that necessity is the mother of invention, he is just beginning to be inspired to make an effort, he often prophesies that a change is at hand, even the professionals have their eyes fixed upon the sturdy yeomanry, for they know that out of his loins are developed the business men and officials in the cities all throughout christendom, and from such a foundation there should be progressive results.

These various classes of farmers are like a house divided against itself — of diverse opinions, and even jealous of each other, and have in the past failed to organize together for mutual benefit. Many attempts have in recent times been made to organize them, such as the Grange, Farmers' Alliance, etc.; but none of which have come up to the reasonable expectations of farmers in general, because, in part, of the reasons above given — nevertheless the unlikely, the

unexpected and the unforeseen is what is most apt to happen — all may expect progress in the near future.

Other avocations, such as the lawyers, who may be divided into four castes — the attorney, solicitor, shyster and pettifogger — each caste being so well known as to not need any special description, only that the shysters and pettifoggers are by far the most numerous. The lawyers are an organized body, the Bar Association is *not* a house divided against itself, hence their success for the purposes that seem to be intended; in their own estimation, they are the salt and sugar of the earth; but in the uncharitable estimation of persons of all other avocations, they are regarded as pernicious to all, except to themselves. They are, however, under all circumstances orthodox, both theoretically and practically, to their seven cardinal principles, the five loaves and the two little fishes. If any doubts this let them get into a lawsuit.

They are so numerous and prolific that they, like the river Nile, overflow into the fattest public offices, and, as legislators, are constantly and very successfully enlarging the public crib.

They are not blamable for this, for they raised themselves up for this very purpose, and what is passing strange is that the farmers don't post up and profit by their example.

Religion as a profession is divided and subdivided into innumerable sects, with creeds of infinite variety, but all for the same purpose, that is, to give spiritual direction to man, both here and hereafter, each church organization being perfect in itself, and as a machine to rule the affairs of men, and to get sustenance from the industrial man, it has used every device to accomplish its purpose, with a wise cunning unsurpassed in man's domain, with a subtle and persevering purpose that has overcome every obstacle.

Nevertheless, when the uncertainty of its promises of eternal happiness are considered, the pioneer farmer is amazed and confounded by the results produced. So much for the church and so little for the industrial man. This to the farmer should be an example worthy of his careful consideration.

The mechanic as a manufacturer has (in this age of labor-saving machinery) united brain work with hand work, which have become perfect coadjutors, and is well organized and equipped to maintain his progressive status; he is a terror to the office-seeker, he can control friendly legislation (which the farmer cannot), he is an honor to his country, a blessing to society, and is the admiration of all. Inasmuch as this recital is true, why can't the farmer see the trick, and profit by his shining example.

The medical profession, like the ecclesiastic, is divided and subdivided into sects of diverse ideas, and his practice, except as to surgery, is all at sea, some adhere to the germ theory of disease, and some say it is a humbug; some are homeopath, some allopath and some faith cure. But they are organized, and wisely organized, for their own interest. The doctor as a pharmacist has supplanted the saloon, as army surgeon, has all got (some say) big pensions, they are no divided house — are orthodox on the seven principles, and have always secured special and very friendly legislation in their favor (which the farmer has not). Franklin said that nature cures, but the doctor takes the fees. He, like the lawyer, are aspirants for political place — are unseemly prolific, and are able to give each other an extra boost into places of power and profit. And why should not the farmer profit by his example and organize for the offensive and quit the defensive.

The farmer should be organized as wisely, as thoroughly, as a military encampment, as bankers, as the Jesuits, or even as the Mormons, for no one can doubt the completeness of the Mormon hierarchy.

The farmer should organize, because all other avocations are being united for mutual benefit, and as yet the farmers are not.

The motto of all farmers should be: united we stand, divided we stay fallen.

Since from the foregoing recital, the farmer is found far behind other avocations in the race of life,—in the pursuit of happiness he is a specimen of neglected opportunities, he is the slave of custom, he has a bigoted regard for the sa-

cred follies of his ancestors, he is unable to break the chains of tradition. He should thrust aside every man and every device that stands between himself and the management of his own affairs. He is loaded with all these disabilities even when this age of reason should teach him and his that his progressive status is plainly within his reach.

Inasmuch as this is now an age of thinking — an age of reason — this essayist from long experience has an abiding assurance of the practical truth of the following points as to

WHAT THE FARMER SHOULD BE.

He should be a universal genius, and not be satisfied unless success attends all his undertakings.

He should be a Jack-of-all-trades, and first-class at his special or general farming, and especially an expert as a seller and as a buyer; also an expert trader.

He should be wise enough to know the bent of his own genius, and not be mistaken, as to his special adaptation to the special or general farming he is about to follow.

He should be competent to determine beforehand, without mistake, what any given farm or field, would produce to the best advantage.

He should be able to determine the economic result, the profit or loss, of every crop from each field, as well as upon the whole farm.

He should be wise to determine the proper rotation of crops, having in view immediate profits as well as the continued fertility of his soil.

He should know, with a given amount of land, in a given condition; and for a given purpose, how much seed to plant or sow.

He should know whether his farm, also each field, is best adapted for sheep, cattle, horses or hogs, or any other stock, at any particular time or at all times during the year.

He should know the natural environment, the natural history of all animals and vegetables, in their wild and domestic state, that he proposes to raise on his farm.

He should know what kinds of stock, or crops of any and all kinds, he is (by nature and education combined) best

adapted to raise on his farm, to the best advantage to himself, for himself, because self-preservation should be the first law of his nature, as well as that of all other persons.

He should be an expert salesman, and should know what time of the year any given crop will sell at the highest price; also he should know and never be satisfied until he does know, where and when to purchase the best farm machinery, best store goods, and all other needful articles, at the very lowest price.

He should control the price of all he sells, and also the price of all he buys, if he desires to succeed against competitors who have heretofore had the inside track, because in this world, it is the survival of the fittest. God is for every man that is for himself, and the Devil for the hindmost.

He should know that it requires an extra expert salesman to sell garden truck, small fruits, fancy butter, tobacco, and in fact all perishable products, to the best advantage, because their name is legion who can raise such products, but the deuce of it is to market such products to advantage.

He who aspires to become a farmer, should be able to pre-estimate to an approximate certainty, as to which class of farmers he, by adaptation or otherwise, belongs. If a tenant farmer, accept the situation with philosophic resignation, but do not for humanity's sake, transmit that serf condition to your posterity.

In conclusion, the farmer should be his own politician, his own lawyer, his own priest, and priest of nature at that, his own teacher, his own banker, his own arbitrator, his own doctor, in fact, be the architect of his own fortune, and finally work out his own salvation, himself for himself and his family, his class and his country. When he accomplishes all this, and he should never be satisfied or lessen his ardor until he does, then, and not 'till then, will his mission on earth be fully completed.

Mr. Adams—I should like to say just one word after listening to this paper. I am reminded of the saying that was

attributed to Carlyle quite a number of years ago. He said there were thirty millions of people in the British Islands, mostly fools. It seems to me that Mr. Broughton has made a demonstration that most of the farmers are fools, but says that although we are fools we ought to try government and law and religion, and know as much as the Almighty and a little more. (Laughter and applause.)

I would like to suggest to the gentleman that there is just one class more; a class that is very limited in numbers, and we rarely find more than one representative in any intelligent meeting of farmers in Wisconsin, and that is the class that seem to think that because when a man is born the first thing he does is to kick, that in order to be consistent he should be a kicker all the days of his life. (Laughter and applause.)

Mr. Butterfield—The gentleman's paper has led me to think about my progenitors and my ancestors, and I want to inquire where I will find some authentic information as to whether my ancestors had a caudal appendage, and if so, when it dropped off—whether I find it in the Age of Reason, or if I can find it in the Survival of the Fittest or in the New Version?

Mr. Broughton—I will tell you where you can find it—not in "Inquire Within," but ask the polliwog and the polliwog will tell you. (Great laughter.)

SOMETHING OF INTEREST TO THE FARMERS.

BY H. H. HAAFF, CHICAGO.

Mr. Haaff was greeted with loud applause as he came forward. He said:

Mr. Chairman, Ladies and Gentlemen—It seems that I am not so lonesome as I was a year ago. I didn't intend to speak this time on the subject of dehorning cattle, but feel some as my old teacher, Judge Booth, said a certain lawyer, John Smith, down in Chenango county, Pa., felt. He got the reputation all over of being an honest lawyer;

he was known as honest lawyer John Smith, and he became very excited over it. He said: "I don't want the reputation." He said: "In the first place, it is not true, and he wanted it to be distinctly understood that he was not an honest lawyer. The fact of the business is," he said, "I will not only lose my reputation, but lose my business." And I thought if I talked of something else besides dehorning cattle, I would run less risk of losing my reputation outside of that particular line, if I should be able to make a success of it. I therefore prepared myself to take something in the line of argument of the last speaker, varying, perhaps, somewhat from his position. (Laughter.)

But, nevertheless, I did propose to talk here at the capitol of this great state on the subject of the dignity of the profession of farming, and I propose to follow it up by inquiring: "What's the matter with us, anyhow? what ails us?" And then I proposed to look into the question of agricultural colleges; but I am willing, unless it is your desire that I should do otherwise, to speak on this great question, this question of so momentous importance to every farmer and cattle raiser in the land.

I am not ashamed to say that I am a dehorner of cattle. There is nothing to be ashamed of in connection with the matter. You know last year I gave you full license to interrupt me at any time. You can consider the invitation extended for this time, and if you have a little fun at my expense, so be it, and if I get in a lick at you, so much for me.

Now I am going to ask you a question I want you to think of seriously, because it is not necessary to have many arguments this year on the subject of dehorning cattle. We are now occupying such a vantage ground, Mr. Chairman and ladies and gentlemen, that we can afford to look this matter squarely in the face, from the stand point of the humanitarian and from the stand point of the almighty dollar—the pocket-book stand-point. That is what tells.

I have been told since I came in, by my friend, Secretary Newton, that the man Horne, who signs his name with a "V. S.," and I suppose, and I think I know, pronounces it,

without the "H," is going to sue somebody for libel. He says I libeled him. Well, for fear that I should forget it when I get into this subject, I want to say now that this is a good time to serve me, in connection with the society, while I am here. I don't go to Chicago before to-morrow noon, the Lord willing. I don't throw it out as a threat, but I say it simply for the reason that as long as this society is willing to stand up, and as I am informed, I know hundreds of farmers in the state of Wisconsin are willing to stand up for the right of this thing on the two positions I have just named, there is no better way to forever settle the matter and stand it on a firm rock-bound basis, than to have a good libel suit, and I don't know any man I rather fight than that man. A man who jumped right out of whole cloth and wrote stigmatizing the practice and those connected with it, in connection with the "*Jersey Bulletin*," and when I stepped up like a man, and said I would go down to Indiana the home of the "*Jersey Bulletin*," and you may choose there twelve respectable farmers with no interest in either you or me, and I will leave it to their decision whether I am right in my position, and if I don't prove you to be radically wrong in yours I will not only stand up like a little man and say I am wrong, but I will pay the entire expenses of the affair, both mine and yours, provided, if I lick you, you shall pay them. Now let him begin a libel suit, or Mr. Superintendent Whitehead, of Milwaukee, or whoever it may emanate from, for I can see they are going to try to make some character or standing for this dead carcass of the Humane Society—and by the way, the chairman of the Humane Society of Chicago, who prosecuted me, has stood up, this year, being called out of his hole, and said he believed dehorning is a humanitarian practice, and not cruel at all. And if these fellows here want some music, they can't do better than to begin it now. I say it in no boastful spirit, either.

The question for the American farmer to consider is whether it is right, and whether it is founded on truth. Now I will go back, and let me ask you, what good are the horns

anyway? Somebody answer that question if you choose. If there is one here who don't know that it would be a good thing to get rid of them, and will stand up here, I will treat you like a gentleman and I will give you a part of my time, to show me now, what good are they anyway.

A Member—They are a damage.

Mr. Haaff.—You are right; look at that motherly old cow right there, (pointing to picture on wall). I take that to be a likeness from life of the Duchess of Smithfield. I stand here to say that there is not as much feeling to that brute in removing those horns—in cutting off the little membrane between the outside shell and the horn bone underneath, the periostium—there is not enough feeling in that cow's head. I take it she is ten years old—to cause her any more pain from the operation of dehorning than there would be to me if I should take a pen-knife and make an incision an eighth or a sixteenth of an inch deep in my finger. What is the use of talking about cruelty under such circumstances?

You that heard me last year remember that I said to you that the severest operation of dehorning that can be performed is on the calf; then the yearling and then the two year old. I showed you last year several specimens. I have got this year, specimens in which the position I took on the subject of frozen horns is demonstrated beyond question. I had a visit at my place in Chicago, day before yesterday (feeling in his pocket)—there is a speech I am going to deliver, you know—(pulling out manuscript), (laughter)—I had a visit from a gentleman day before yesterday, who told me that in operating way off Northwest in Kansas and Nebraska, I forgot which—it is where it is pretty cold—the gentleman said that if he lost one-half of the cattle and saved the others with perfect heads after the horns were taken off, he would consider himself well off. Why? Because almost all of them were frozen; and I stand here this year and reiterate the statement that it is not only humanitarian so far as human life and human misery are concerned in handling them, from the great danger of injury, but it is the greatest sort of kindness to the brute itself, from any point you choose to view it, to remove the horns. I say it as a

man standing in the sight of God who expects to have to have to answer for what he thinks and what he says, that I do not know of a single consideration that can be named or that is worth considering, against the practice of dehorning cattle if rightly done.

I have a letter which I received yesterday from Mr. C. E. P. Webster of Maryville, Kansas, in which he proceeds to tell me: "I just returned home"—well, if I get to reading letters I won't get through. If you want it you can call for it. I will tell you what he says: "I just returned home from a trip in which I dehorned fifteen herds of cattle among the farmers of Kansas"—somewhere; I don't know where; somewhere in that state—"on my way home I found a herd of cattle which had been improperly dehorned." And now writing to me he says: "There will be for years, the greatest objection in that locality and all around where the thing is known, against this practice. Why? I asked this gentleman if he thought these cattle had been properly dehorned, and he said, "yes;" and said he, "if the result here on my farm is the usual result of dehorning cattle, all I have got to say is, I don't want any of it." What is the trouble? "Well, I lost five head of my cattle by dehorning." Brother Webster was urging the question in connection with the issue of my new book. Now I shall have to say this year that I have not brought anything here to sell. Last year you remember I had some tools and I took a great many orders. This year I have not even brought my specimens. I don't want a cent of money; I don't have to get it in this way. Now I am not here to sell tools, although before you get through with it you have got to have my tools to dehorn your cattle right. You hear what I tell you. (Laughter.)

Yes, sir; and you have got to have my book. You are going to have it. For at a great expense, I will say right here, I am getting out a book, "Dehorning Illustrated; or Every Man his own Dehorner," in which I give fifty or more illustrations, showing everything connected with this matter, so the way-faring man cannot make any mistake, showing just how he fastens the brute up; just how the brute is

tied and how he turns it loose, and what he does under all circumstances at all times. Brother Webster says these cattle, all of them or most of them, had stub horns. Somebody came there and operated on them and they had stubs. Last year I told you about a neighbor of mine who supposed he could saw a horn off as well as Mr. Haaff could. Now I simply say this; I said it through the "*Western Rural*," the "*Ohio Farmer*," and "*The Farmer's Review*." I have said it through a score of good papers—the best in the country,—there is a right way and only one right way of dehorning cattle. I can't stand here and tell you all about it, but I can give you the pointers and you can study it for yourselves at your leisure and it ain't going to cost you much either.

In the first place, gentlemen, don't put a saw on an animal that is heated. You hear what I tell you? A gentleman wrote me he had lost, yesterday, the first animal out of several thousand he dehorned. "I want to tell you the circumstances," he said, "and I want you to write and tell me what the matter was. I was dehorning at a certain place, and had my tools and apparatus there, and the gentlemen drove some fifty head of cattle from three miles away, driving them very slowly and letting them stand a little while before the dehorning, and then driving them slowly back, and the next day one of them was taken with bleeding and died." I said, "My friend, the solution of that problem is simple enough. No creature can walk three miles without greatly increasing the circulation of the blood and the action of the heart." You can demonstrate that for yourselves by counting your pulse when you start on a walk and counting it when you get through, or an hour after, I don't care. The simple English of the matter is this: you must not dehorn your cattle when they have been exercised. You must not do it. Neither must you dehorn cattle, my friend, when they have been excited. And now listen: You have no business to drive your own cattle into a yard where there are a lot of companions to assist you to have them excited by the new scenes. You have no business to put a saw on them at all under these circumstances.

Let your cows in the yard an hour before. If you have a dog, kill him before you go for the cattle; dehorn him right back of the ears. (Laughter.) Keep your cattle quiet, and if your old cattle have been running by themselves and your young ones by themselves, do not turn them in together. I received one or two letters within the past week, for I am in receipt of forty to fifty letters per day from all over this country, and from farmers wanting to know how this thing is, and you can not stop it any more than you can stop the force of the Amazon river. Not at all. It is out of the question; it will take care of itself now.

But what I want to say is this: I gave got letters in which men say — why one man says: "I have got an eight months calf, and we had to get that eight months calf right out." This man began and dehorned the bull first; then he took the old cows or bosses and then he took the balance of them, the two year olds and then the yearlings, and last of all this eight months calf, and he just simply and literally had to give the calf away because it drove the balance of the herd all over whenever it got a chance, incredible as it may seem; you try it on your own cattle when you have dehorned them. Remember what I say now, and blame me if I am wrong. Every one of you. You will see the force in what I say. A calf with his little horns will best the biggest boss you have in your herd. I don't care be he bull or calf or cow. That is a fact, and I know it. So remember, don't mix the different kinds of dehorning. After they are perfectly quiet, and you get them into the chute, if you use one, have a little yard made and put them in there and let them stay a few minutes with each other and see that they are not going to take any harm from each other. Then get hold of the worst one you have and haul it into the chute. The chute ought to be long enough to have three or four at a time and grind them out without yelling or bawling or anything of the kind, and I will pay your bill of damages if you have any die, if you will follow my directions.

My friends, this man Webster has dehorned over ten thousand head of cattle in Kansas, and what does he do? Why, he guarantees to every man he operates for. I said to

him, "Webster, you are foolish; I would not do that." I never dehorned many cattle, but I have taught a great many different people how to do it. "Why? I will tell you why." This is the exception. Once in a great while you will come across an animal whose blood will be almost black and stagnant. The chances are nine to one that he has got heart disease. He has some organic trouble of the heart. He is out of order somewhere and that animal is going to die right there. That will happen maybe once in ten thousand. I won't say in a thousand for I don't believe it. I had one such case myself, and since I was here I had an animal choke to death. Now I can explain the trouble in that case to you. You know in the stanchions the bar that drops on the incline to let the head in. Now if you have a big bull you cannot close that stanchion up on the bull. You must not do it. You must turn his head this way (indicating), and you should have a pin at the bottom, so that when his head is secure you can draw this pin at the bottom and prevent him choking here (indicating). And let me say this, a bovine chokes to death very much quicker than a man. I make it a rule in operating on cattle, on every one, to keep my hand on the nose during the operation. I don't let half a minute go by that I don't put that left hand down to know whether the animal is breathing or not. I think it is wrong to dehorn a bull in a chute with straight sides and stanchions on the end, and I said so, but they said go ahead. They dehorned all the cattle successfully after I dehorned two or three to teach them. But I say this: It is not the way to do, because you understand in performing an operation on a bovine or horse either in a chute with straight sides you know they can cast themselves and brace there and you can't do a thing with them.

Now I will tell you a thing I learned since I was here last year; for I am on the learn all the time. I make my chutes now with one plank at the bottom ten or twelve inches wide, and I flare the sides out so that it is three feet wide at the top. Now, think a moment, gentlemen. You see that the animal in there can't cast itself. The sides I board up with tight boards. I take fence boards and cut them off at three

feet and nail them up on the timbers. And I am recommending the chute made in that way, and you ought to have such a chute — every farmer had, whether you dehorn your cattle or not. I have spoken of the questions of excitement and handling. Now, many of you know what my new mode is. It is simply perfect. On the side of the chute here, is a plank that stands in this way (indicating). Your animal passes into the chute and you put a bar behind him and hold him to this position. A man standing here catches hold of a chain, which is firmly fixed by a bolt to the bottom of this plank, and draws it from this side right over the neck of the animal, and closes the blocks so that the animal cannot choke, and you put then a six or seven foot hand-spike in here, and one or two men take hold of it and pry it off this way (indicating), and you can hold anything that walks on four legs. Then I put a bull-leader in the nose and stand in front of the animal. He cannot move sideways, and I take him by the horns and put that hand on his nose and bear his nose right down. A man who has hold of a rope at the end of the bull-leader, gives it a wrap around a post at the bottom and the animal is ready to operate upon. All these things will be demonstrated in the new book, which will be out in March, so that there will be no mistake about the matter.

Now before I forget it, here is a little circular which I had from a gentleman in Iowa. He was also in to see me this week — Mr. Richards, of Cresco, Iowa. He is the boss de-horner of the world; he has dehorned over thirty thousand head of cattle. And he has himself invented a stanchion or chute that I think is a very excellent thing, and he is getting out a patent. You know by these testimonials that he must be having uniform success. I mean to give Brother Richards the benefit of all I can so far as he is concerned, at the same time I had in candor and fairness to tell him that I calculated to get away with him and Brother Webster and all the rest of them on the subject of holding cattle.

Now I am going to read to you here what a man very much in earnest says about this matter. It is November 28, 1887.

For many years before Mr. Haaff demonstrated to the world that horns could be removed with perfect safety, I believed that the horn was a great disadvantage to the animals themselves and a nuisance to mankind. I lost no time in experiments to test the truth of Mr. Haaff's discovery and gift to the world, finding by actual experience that his statements were fully borne out, and more satisfactory than one could have hoped for. I began to practice and make the matter a study, determined if there was a right way to know all about it. After an experience of more than ten thousand head I believe I have a right to come before the people and present to them my views and experiences in the matter and ask for patronage of those who are contemplating to get rid of this great abomination on the farm. Not a few have held up their hands in horror and raised the cry of cruelty. When the cruelty bubble exploded, they said some crank had started out, his day will be short, and it will soon blow over. But the signs of the times do not vindicate their statements. One has only to look around him and see the class of men who are adopting this grand improvement. My first patrons are always the representative men of the neighborhood, such as the reading class of men, farmers, stockmen, preachers, senators, representatives, lawyers, bankers and merchants, and in every instance are men who are fully up with the times and understand what they want regardless as to what somebody else says about the matter. A convincing argument that dehorning has come to stay is the fact that two years ago there was not more than five counties in the state of Iowa where a horn had been cut off. Last winter I was only able by hard pushing to remove about three thousand head, not going out of four counties. The present winter at the present outlook I shall be able to remove at least forty or fifty thousand head, going at least into five states.

I cannot stop to read all of this, and you don't want to hear it. Here is what some others say about it:

CRESO, Iowa, November 1, 1887.—This is to certify that Mr. W. H. Richards has satisfactorily dehorned a number of cattle on my farm. Bitter experience has taught me that no stockman can afford to winter horned cattle. The horn is a relic of barbarism. It must go. Cruel, you say. Yes, it is cruel to have the entrails ripped out of your favorite family horse. No more horns for me, thank you. C. A. MARSHALL.

ALBION, Iowa, November 2, 1887.—Mr. W. H. Richards, the dehorner, dehorned my cattle in February, 1887, and I consider it one of the greatest blessings to myself and to any farmer who is wise enough to have it done. Horns are only an accursed nuisance, dangerous to all kinds of stock and their owners. Nine of my cows calved within three weeks after Mr. Richards dehorned them, and the calves are all smart and healthy. I saw no falling away of flesh, nor any decrease in the amount of milk; nor were any of them sick. The pain caused by dehorning is but momentary.

as they went right to eating as soon as free. I consider it a simple, harmless operation, and I cheerfully recommend Mr. Richards to any farmer who is desirous of having his cattle dehorned.

JAMES NICHOLS.

CRESO, Iowa, Nov. 1, 1887.—This is to certify that Mr. W. H. Richards did, on the 19th day of February last, dehorn for me about fifty head of cattle of all ages; that they bled but very little and showed but very little signs of pain, only during the operation, which took but a short time, when confined in his frame he uses for that purpose, and when released they went right to eating, chewing their cuds, etc., and the cows that were giving milk at that time did not seem to shrink in quantity, as they are all more quiet and peaceable and crowd around the feed racks and watering place and require much less shed room. I am satisfied that horns on cattle are a nuisance, and I want no more of them on my farm.

A. B. BARNES.

To go on would simply be to read a dozen other testimonials like this, and there is no time for it. There is something I want to say here before I quit, and I believe it is of importance and interest to you. Somewhere I have got a letter from Mr. Hoard, of *Hoard's Dairyman*. I wrote Mr. Hoard a week or more ago — I don't seem to have the letter here with me, and I said to him: "Of all the leading papers that are discussing the question of dehorning, I don't seem to hear anything from you, or if I do, what you say, the way I understand it, is in opposition to the practice. Will you kindly tell me what your views are, and also if you are willing that the matter should be discussed in your paper; and by the way, I should be very glad to see an occasional copy of your paper without having to go to another paper office." In fact, it was the other papers that called my attention to Mr. Hoard's paper, or I should have known nothing about it. Well, Mr. Hoard wrote me; he says: "I want facts. Dehorning may be very good for Short-horns and Herefords and other cattle of the beef kinds, but for Jerseys and Guernseys, not any of it. I don't want it."

In reply I asked him if he was willing to have the matter discussed. He further said: "I want facts." I have no objection to discussing facts, but I want plenty of them. If you can show that the progeny of Jersey bulls and Guernsey and Jersey cows when dehorned does not lose butter potency, then give us the facts, and the men who have had

their heifers dehorned and have got butter from them, and are able to say 'That is what we want.'

Now when you recollect my friends, that it is less now than two years since I gave this matter to the public, you will understand, and Mr. Hoard understands as well as I do, that it is simply impossible to answer that question, because no man, Mr. Chairman, has had dehorned Jerseys long enough to be able to raise calves and have them mature, and have a record as milk and butter makers. Do you see the point? Now Mr. Hoard knows that as well as I do; therefore his statement is a put up job on me and my practice, and I am glad it came to me. Now I don't know as I shall please you all. I didn't come here to do that, but I came here to tell the truth, and I have not called any names except in a respectful way, and I ain't going to. I ain't going to mention Brother Hoard's name at all, at any time, except I do it in the most gentlemanly manner. I am going to stop here pretty quick, and let you ask me questions, but before I do it, I am just going to say, there are two ways of doing things. Solomon, you know, says, "Answer a fool according to his folly." Then he turns right around and says: "Answer a fool not according to his folly." You see the point. I won't stop to illustrate it. If you answer him according to his folly, and if he has any sense at all, he will learn sense from a foolish answer. If you answer him not according to his folly, if he has any sense at all he may possibly see sense in that way. So the wise man left two ways of doing it.

Now I am going to say this; so far as dehorning cattle is concerned, Jerseys and Guernseys, how ridiculous it is to talk about its effecting their butter qualities. How perfectly absurd! You recollect the story I told you last year of Dauphin the Twentieth, the Hereford Bull. I showed you his horn, which was over four inches at the base where it was removed. If there ever was a case in which a bull should have lost his prepotency, it was in the case of that bull. I followed it up in hundreds of cases last summer and went away out on the ranch of R. A. White, who has over twelve hundred Short-horn cattle, and I dehorned three big Short-horn bulls for him and so far as they are concerned in

his herd, I hold a letter right here I got from him. They were in every way pleased with the result. Every way; and I will say this: I will pay for any bull, I don't care where he is, that is properly dehorned, who loses his prepotency, or his power to get calves. Now butter potency is an original expression, I take it, of Mr. Hoard; and it is a ridiculous expression.

DISCUSSION.

Mr. Carschocken — Pardon me, but as I have got to go and take the train, I want to say something in behalf of the idea which you advocate. I heard of it and took a fancy to it and I had my cattle dehorned — all of them. And never have I regretted it, for they have all done well, done first rate. They didn't lose in their milk and they didn't lose in flesh and I must say to you that those yearlings and those calves, they go to a rack and eat just as agreeably as if they were sheep, and there is not a critter that could hurt one of his fellows. They are more docile than they used to be; they have less of masterly propensities, and they become harmonious, humane and innocent. And I will say furthermore that several of my cows have come in in a fortnight after this was done, and apparently have done remarkably well. Their calves are all right.

Now I say this in behalf of the gentleman. I have had experience and I will say to all of you, the cruelty that is talked of is nonsense. My cattle ate immediately after they were dehorned; ate well and drank well and rested well, and never showed any symptoms of pain; and a man dehorned them that never did it before. He is a veterinarian, but I don't suppose he did a good job and I know I didn't have any fastening to hold them as I ought to have had, and they flounced around a good deal. This I say on behalf of the remarks the gentleman has made before you, and if you will follow my experience in the matter, you will find it will be one of the greatest blessings you ever had. There is no danger of anyone being hooked to death by a vicious animal, and many of you have lost colts and horses by their

going where your cattle were. My calves now walk up beside a cow as independent as can be, and there is no hooking about it. They don't know how to hook. To me the practice is a prime thing and I recommend it.

Mr. Everson — I was encouraged by the experience of one of my neighbors to dehorn my cattle. I dehorned them, and Mr. Farlow here, that lives in the neighborhood has taken the horns off a great many of the farmers' cattle there, and they are so well pleased (laughter). I was so well pleased with the appearance of the cattle that I had dehorned. Some said it would spoil the looks of the cattle. Well, I like to have my cattle looking pretty well. I have got good cattle, and I must say it improved the looks of them. When I heard that our Prof. Henry recommended it to the farmers as being a merciful act, I was satisfied that I was perfectly safe to take the horns off my cattle. Mr. Farlow here, who is a very prominent man in our neighborhood, I think will tell you if you want to know, that he has dehorned five or six hundred head of cattle, and I think before one year from now we shall have but few cattle in our neighborhood with horns on.

I want to speak of one little thing on my farm that pleased me well. The other day my son called my attention to one cold day, he wanted me to go and look in the basement and see the cattle—how they stood together. I went around with him, and there was eighteen head of cattle that stood as near together as a flock of sheep, and they were just as peaceable and quiet. There wasn't a sign of hooking; and I never saw the time before but three or four of the master cattle would have stayed in the basement and kept the others off. And if I had to do it over again, I would not have horns on my cattle for considerable if they could not be taken off.

A Member — How do the shippers like to buy them?

Mr. Everson — I have not heard of any refusing to buy them on account of the horns being taken off.

Mr. Goodwin — In Chicago that matter was settled at the stock yards last year. There is no discount on dehorned cattle if they are in good shape.

Chairman — Would you recommend taking the horns off of pure bred cattle?

Mr. Haaff — The Short-horn and Hereford men simply have got to do it or lay down in the presence of the Polled Angus and Galloways. They have got to do it. That is all there is about it. I have done it on thousands, or stood over men I have taught and seen them do it, on thousands of imported cattle. I have a letter from a gentleman in Nebraska whose name I can't remember. Every man says it saves me so much in feed; and not simply feed alone but the dehorned cattle will huddle together and that keeps them warm and that saves feed.

The Short-horn men have got to compete with the fact that we will dehorn our cattle and they have got to meet that question. I have been using myself, a dehorned Hereford bull and a Polled Angus bull, during the last year. I have rented my farm now for four years and lived in Chicago. I simply had to do that to attend to this matter. You have no idea of the letters I get. I got a letter yesterday from Texas. I received letters from South America and Australia. The simple wonder on the part of every one is that they had not thought of it before.

Now don't forget there is a right way to do and a wrong way, as you will learn. I said last year that before I got through with this thing I will have every farmer in this United States his own dehorner, and I will do so or die in the attempt. (Laughter.)

Now the Hereford men and the Short-horn men — I ain' going to part with these cattle Mr. Chairman — why the Short-horns of this country are by far the largest part of all the beef cattle. It is astonishing, but they outnumber all the others put together. The Short horn is a good thing and on the same principle no horn is a good thing. (Laughter.) And the thing reasons itself out.

These Short-horn men say: "We are buying Polled Angus bulls." Why, of fifty calves I had, only one of them had those little stubs and the rest of them were without horns. Somebody has got to give me a Short-horn bull without horns, that will breed the horns off, or else I am

going to keep at the branch I am at and not going to be fussing dehorning calves every year. I have dehorned all my Hereford calves and they are beauties. Why I have dehorned a herd of fifty calves and fifty yearlings; and go there and look at the fifty calves I have on my place and then the fifty yearlings because they are all white faces, every one of them — my bull was a wonderful old fellow, and I mean what I say when I say it, wonderful old fellow, though he was a man-killer; very nearly killed several men before he had his horns off. But to look at these white faces without horns would simply make the tears come to the eyes of a man that loves cattle; it makes him feel so happy. It is a fact. I say it in dead earnest, and you never saw such a sight as white faces and no horns, and so gentle and nice. Why I have dehorned cattle, these high-bred Short-horn cattle that have run on a thousand-acre ranch with a six foot stone wall, and it wasn't safe for a man to go in the field. You should see the men that come to see the operation and climb on the fence when we got there to dehorn them, because they would go for you. Were they so after they were dehorned? Not a bit of it.

Prof. Henry — I desire to speak on two points. I have been watching the sentiment of this meeting as expressed by the countenances and manner of the audience, and marked the great difference at once from last year when my friend Mr. Haaff stood here for the first time before you; and I am surprised and gratified. When I stood up then and said I believed in dehorning, it was rather a bold thing for a man in my place to do, where a man must always be conservative; but I am glad I can say more firmly than then that I stand by the apostle of dehorning. Mr. Haaff and I can see that this audience is much more with him than the audience of last year.

Mr. Haaff, last year had occasion to dwell upon the proper form of the word, as to whether it should be *dishorning* or *dehorning*. A certain M. D. or V. S. who attacks him wrote "dishorned." Mr. Haaff stood here and said it was *dehorned* and I see by the authority of Webster's dictionary — those parties who have the management of the dictionary in New

England have been consulted by my friends from my New England homestead — an energetic pusher for dehorning also — and the authorities of Webster's dictionary say "dehorning" is the proper form although dishorning may be used; so Brother Haaff is right.

The second point is this: I see from the countenances in this audience, there are men who think that man is cruel to the animal and ought to be hung or shot. You remember that since this man stood in this audience one year ago, three persons have lost their lives in this state — gored to death. Since that time, one young man in Grant county has been killed by a vicious bull. Said a friend of his to me speaking of that eighteen year old young man: "That young man was worth all the horns in the world."

Mr. Haaff — Amen.

Prof. Henry — A boy in Racine county was killed, and our friend D. W. Maxwell, one of the oldest breeders of Holstein cattle in the state — he had such a good bull, and his owner was proud of fine qualities — but Maxwell passed away through that awful death of a man ripped and torn to death by a vicious animal. Judge Vaughn, of River Falls, met his death in the same way a little before. Four lives lost in fifteen or sixteen months. And I believe more people are killed in the cattle districts of the United States by horns than are killed by the railway cars of those that buy and pay for tickets. I believe I am correct in that — more people killed by vicious cattle than are killed on the railroads, after having bought tickets. I don't mean railway employes. So you run a great deal more risk in taking care of cattle than you do in riding on the railroad.

Mr. Wilcox — I would move that those who have had experience in dehorning and agree with Mr. Haaff, rise, that we may see how many in this audience there are who have dehorned and have had cattle dehorned for them, and approve of the practice.

Chairman — Those who have dehorned cattle and find it a success, will rise.

Chairman — As I count them, there are fifty-three.

Mr. C. E. Warner — I would like to have those who have dehorned and don't approve, to arise.

Mr. C. W. Adams — I wish to relate a little experience that happened close to me this last spring. I have never believed in dehorning cattle under any circumstances, but I had a brother-in-law that had a full-blooded Durham two-year-old which became very cross. There was no one around dehorning in our country then, but he had read of somebody dehorning cattle and he thought he would try the experiment himself and save the lives of two little boys that used to run after the cows and bull. One is eight and the other is five. They took it on themselves to bring the cows up night and morning.

He took the bull into the barn; he had no way of fastening him well, but he took an old well rope he had and he tied him so tight he could not move anyway, and sawed his horns off close to his head. And he had never done any such thing or seen it done before. I told him that he would die, and he said if he died, let him die. To-day that boy eight years old can walk into the yard and take him by the ring in his nose and lead him to the stanchions.

Mr. Haaff — Tell him I say, when you go home, that a bull is a bull, and not to allow the boy to do it. I know you can do it right along, but don't let him do that. You have removed the weapons of the terrible creature, but the spirit of the bull is there yet, and when that bull has his bull manifestations he is going to use that head. I grant you that the weapons are gone and the chances are that he will kill nobody, but don't you do that thing. (Laughter.)

Mr. Sawyer — I had a little experience a short time ago. I had a thorough bred Jersey bull three years old. He never had run after anybody and people were not generally afraid of him, nor I have never been afraid of the animal in my life, but whenever you were coming near, he would commence pawing; but what hurried me up in the matter, one of my neighbors had been knocked down and pushed promiscuously about the yard, and I determined to have these horns off. I didn't have any dehorning saw or anything of that kind. I got him in the stable and got

a couple of men to help me, and got an old saw, a regular hand saw and went to work on him, and we had a pretty severe tussle I assure you. I had never seen a horn taken off before, but in an hour or so we had his horns off and I felt safer after that, because I knew he was afraid of me and he knew it, and that is worth everything else. (Laughter.) And I say Mr. Haaff is all right.

Mr. Haaff — Brother Carrial, of Jacksonville, puts it better than I ever heard it put. At the insane asylum at Jacksonville, I dehorned a Holstein bull, a monster that would weigh a ton. After six weeks or so he wrote me a letter and he says, "I have waited until there would be no question, so I could make a reasonable report to you; as you asked me to do. This bull had nearly killed two men for us, and he was like a bully with a pistol in his hand; since that time he has been like a bully with the pistol in the other fellow's hand." (Laughter.) But now he is a bull, remember that; and the thing to do with a bull is to treat them always carefully and not go ahead of them, I don't care; dehorned or not. I want to read you what Brother Newton called my attention to:

"Dr. Bishop, of Fond du Lac, recently saw a fight between two dehorned steers on the farm of Mr. Mihills. The finest looking animal seemed confident, and as he approached his enemy appeared to realize that his head was no longer of any use except to eat and see with. He turned quickly to one side, pointed his posterior toward his enemy, and let fly his left hind leg with a force like a cannon ball. Like Sullivan's blows, it pounded its rival's ribs, and knocked him out in the first round. The doctor is a convert to the faith of the dehorner, and says he believes a well-bred steer knows a thing or two."

"George Fairfield, a well known farmer of Crawford county, is opposed to the dehorning of cattle. He says the cells extend high up into the horns and that when they are amputated it removes a nerve tissue very near the brain, and admits the air and storm through the head and also immediately around the bone which covers the brain. Baker says: 'There is a continuous cavity from the muzzle to

the horns,' and John Harris, of Grant county, who had eighty head dehorned last fall, told Mr. Fairfield that in many instances he could see directly through the head from one horn to the other." But there is no such thing as a continuous cavity through the head from one horn to the other, and I am going to show you and you will see the error of this statement.

Here is the bovine head. The parietal walls just like the human. Now, suppose God had built another story on it up here on the front, you would call that the frontal bone. Underneath it would be filled with little cross-bars; those are the frontal sinuses. When they talk of continuous cavities it is a mistake. Down here is simply a porous bone. It sometimes happens in dehorning that a drop of discoloration more or less will come through and be apparent at the orifice of the nostrils, but that there is a continuous cavity is a mistake. It is not so. And neither can any harm come to the animal if blood does appear here more or less. I don't care; pay no attention to the blood. If the frontal sinuses fill up, let them fill, nature will take care of it. As far as the opening straight through here, in some cattle that is so. In my new book I have demonstrated that they, and pictured it out, and explained how the thing will heal up.

Mr. Williams—What is the right time in the year to dehorn?

Mr. Haaff—Any time but fly time, provided in very cold weather your cattle have free run of a cool shed.

You should bear this in mind—I have explained it in my new book,—you should lay the ear back and take out a part of the matrix, or else you won't have a shapely head, and if you don't do that, you won't have a well healed head. If you leave a portion of the shell there the shell will heal and grow, or else it will matterate, suppurate, and slough-away, and there will be for a long time a sore head.

Mr. Williams—Wouldn't it be a good idea to put beeswax or tar over it?

Mr. Haaf—No; don't touch it. The tar stops the flow of serum, and retards the healing, as I said last year.

Mr. S. A. Farlow—I would like to ask Mr. Haaff what kind of a chute he talks about.

Mr. Haaff—Now I could dehorn any animal in stanchions; but the very first one you dehorn, you have got that buck fever, and you may break a leg or cripple it. Now with the arrangement I have got,—and a practical man can build one in a short time, and every farmer ought to have one for lots of purposes on the place,—you can absolutely put anything in there, I don't care what it is, and it can't be damaged. It isn't pleasant to have such things come up as this from Kansas, and the one from Bloomington,—there is no need of it, and I won't have it.

Mr. Farlow—I have dehorned in the neighborhood of five hundred head, and I have done it in stanchions, and have had no bad luck.

Mr. Haaff—Well, you know how, and you never would lose any. You know, Mr. Farlow, if an animal falls right, I don't care if it is a cow that is going to calve to-morrow, if she drops on her hip like that (indicating), no harm will come to her.

Mr. Farlow—I have dehorned cows within three days of calving, with no bad results.

Mr. F. L. Henry—You spoke of putting the cattle in a shed after they were dehorned. Would it be right to put them in a warm stable, in the stanchions.

Mr. Haaff—Yes; put them right in the warm stable and let them go. You need not use any stanchions, they take care of themselves.

Mr. Thorpe—I dehorned ten head of cows last spring. I had them in the stanchions, and I went to the first one, and tied her up with a five ring halter, and tied her so tight she could not move either way. When I commenced to saw the horn I felt just about as I do now in getting up here to talk. (Applause and laughter.) I had the buck fever, as he said. But after I got that first horn off I could have taken off a thousand. Every cow I tied would turn on her hip, and she never would struggle until I let the halter off her to get up. Now I want to inquire if Mr. Whitehead is in the room. I see a good many white heads, but I don't see him.

Mr. Haaff — He is waiting for advices from the Royal Veterinary College of Scotland, before he comes in.

Mr. Thorpe — He had a little circular in the *Sentinel* condemning dehorning, and he spelled Mr. Haaff's name "Hoff." I want to tell this audience that a man who hasn't read enough about dehorning to know how to spell Mr. Haaff's name, don't know any more about dehorning than a minister does about Heaven.

Mr. A. A. Boyce — Every case of abortion I have had in my Jersey herd in fifteen years I have clearly traced to horning, and nothing else. The Jerseys are very prone to use their little, sharp, vicious, horns when they are let into the yard. One day I was standing in the yard and I saw one of my wife's favorite Jersey heifers pinned to the side of the barn by the horns of another. Well, I thought I would deprive them of those weapons of offense. I did not think that any civilized cow had any business with horns, or any use for them. I sent for a man that had dehorned some, and he dehorned sixty-three head for me the next morning. I weighed the milk that morning and the morning after, and there was scarcely any perceptible difference. They went to eating immediately after the operation, and in one instance in less than five minutes afterwards, being let out into the yard with her companions, one of them forgot that she had lost her horns, and gave a thrust at another, and it hurt her, and she stopped.

My experience is that I can keep forty dehorned cows with as little expense as I could keep thirty with horns. I always had to put a man in the yard when they were let out to water to keep the master ones away from the trough when they had sufficient water, and let other ones come up. Since they are deprived of those weapons the little calves thrust their noses right in beside the master cows, they know they can't be hurt. And you can drive them all into the barn together, and there is no hooking and no fuss, they all take their places quietly, no animal is afraid of another. I would not, sir, for ten dollars a cow, have the horns replaced on my herd of forty Jersey cattle if I could not get them off again.

Mr. C. M. Arthur — I would like to ask Mr. Haaff what he would do in a case such as I had, where I found three or four grade Holsteins, where there seemed to be a little layer of flesh runs up on the horns, so you can't tell where to cut?

Mr. Haaff — I would lay back the hair and have some one hold it,— in such case I wouldn't cut a particle,— and then I would take a fine saw — you know the blade of my tool isn't more than one eighth inch wide,— and I would cut in under here and aim to cut the matrix about three-fourths or four-fifths of the way down and then stop, and then come on the other side and make the same kind of a cut as near as I could below, carefully removing the hair and leaving it to drop over the orifice. I would let that alone for a year, and if I got a stub horn, I would take it out, knowing that the second time I removed it it would not come again.

Mr. Arthur — In my experience that is the only trouble I have ever had.

Mr. Haaff — I am enthusiastic as a farmer. I was forty years old before I was able to buy a farm, and I love the profession—the calling. I delight to talk to my brother farmers on the conduct of our profession. I think that God himself,— He first planted the Garden, you know,— was the first farmer. I have conceived that it is my mission to do a few things. In the first place it is my duty to make every man his own dehorner, and have him know just as much about it as I do. In the second place, I think it is my duty, and I shall do it if my life is spared three or four months longer, I shall have a practical cattle tag. In the third place, I am going to get the farmers a practical water heater, one that is inexpensive, that will do the business every time. And in the fourth place, I am at work and have men at work now on an endeavor to find a cheap, practical, perfectly safe—no steam at all—every day farmer's engine.

And when these things are done, I believe when it comes to reckoning up there, God will give me a credit mark for having discovered how to dehorn cattle. I say it with great pleasure and pride; I honestly believe it.

(A note is handed to the speaker.)

No; I never heard of any one using chloroform or any anaesthetic. I would not do it; it is not necessary.

Mr. Adams—The committee on resolutions recommend the adoption of the resolution of Mr. Anderson.

WHEREAS, Thousands of tons of rags and shoddy are imported into this country every year, and as there is danger of cholera and other diseases being brought in by their importation, therefore

Resolved, That we request our senators and representatives in congress from this state to use their influence in the support of a law which shall absolutely prohibit such importations.

Resolved, That the secretary of the Wisconsin State Agricultural Society, be requested to transmit a copy of these resolutions to each of our representatives in congress.

Unanimously carried.

Mr. Adams.—The committee also recommended the adoption of the resolution.

Recognizing the material aid rendered this convention by the several railroad lines of this state, in a liberal reduction of fare to those in attendance, and mindful of various like considerations in the past history of the State Agricultural Society, therefore

Resolved, That the thanks of this convention are hereby tendered to the railroad lines, in our state, for this continued evidence of courtesy and liberality, characteristic of their uniform dealings with our society.

Resolved, That a copy of these resolutions be forwarded to the officers of the several railroads embraced in the above resolutions.

The resolution was unanimously adopted.

Mr. Adams — The committee recommend that the following resolution be adopted:

Resolved, That the members of this agricultural convention fully appreciating the courtesy, energy, tact, taste and ability manifested by Secretary T. L. Newton in making arrangements for cheap transportation to this meeting, and entertainment and instruction therein, hereby tender him their hearty thanks for his efficient services.

The resolution was unanimously adopted.

Mr. Adams — The committee recommend that the resolution on cattle growing industry be indefinitely postponed.

Mr. Anderson — I would like to know the reason for that.

Mr. Adams — The reason is, first, that we haven't the bill referred to in this resolution before us for consideration; and we don't think it a becoming thing for this convention to re-

quest our representatives to support a bill which we have not read. And the committee believes that this thing would be better placed in the control of skilled veterinarians than in the hands of any cattle growers' association in the United States.

Recess.

THURSDAY 7:30 P. M.

The Chairman — Until the meeting is a little more full we will give an opportunity to some gentleman to talk on any subject that he thinks would be interesting to the convention.

Mr. A. J. Phillips — I take a paper published in Illinois, whose specialty is the draft horses of the west. It treats of all breeds of imported stock, but the draft horses take the lead. They offer nine premiums, one for improved stock on the farm, another for the care and management of draft stallions, another for handling sheep and another for handling swine. They are all very good prizes, and I had some leisure and I wrote them an essay on improved stock on the farm from what I had learned from observation and experience and I received the only one of the nine premiums that came to Wisconsin — a fifty dollar Belle City Feed Cutter. The essay is not published yet, but some of the points in it were hinted at by my friend Beach this afternoon.

Mr. Beach — I had not read your essay through.

Mr. Phillips — No, sir, you had not, and I didn't hear you talk, either; so we are even on that.

In that essay on improved stock on the farm I divided the subject into a hundred points. I placed the full blooded sire at thirty, the maturity of the sire equal to thirty points more, the care and handling twenty points, and the feed twenty points, making one hundred. From observation and experience both, I find that in our part of the country — La Crosse county — perhaps it is not so much so in the southern part of the state because I think you have better stock than we have in the north — that many farmers have used

immature sires. To-day there are very few of our editors that advise immature sires — yes, Theodore Leois does it, but I know in the town I live in there are animals entirely run out by immature breeding.

I asked this question: Why is it that our horses in the west have increased in value and have improved faster than any other stock? The reason is because we have used more mature sires.

Every man has some specialty. He may try his hand at many things, but he settles down to the right one. I went into the fruit business once and didn't come out of it so well. I was like the man that invested out in California, and when he returned discouraged his neighbors, said: "Why, didn't you save yourself?" "Yes," he said, "I saved *myself*, but I lost about all I had." Now I have been giving the matter for a few years some study, and I do not find anything better for me than dairy cows and draft horses. We have a great market up with us for draft horses. We suffer as little from competition as anywhere. These fellows out west never can compete with us until they can milk a cow on horseback, and that will be a good while. I am going to ask you a question in regard to draft stallions. We were in trouble up in our county years ago because we hadn't any, and now we are in trouble because we have them. This County Fair business, you know, is auxiliary to the State Fair. The county officers have to report every year to the state society, and we get an appropriation of two hundred dollars, and in addition we get ten per cent. of the premiums; but we are in trouble because we have got two full blooded Norman stallions, two Percherons, two Clydes and two Shires, eight of them, and we cannot get a committee at our Fair but what is prejudiced in favor of one stallion or the other. They say that the awards made last fall were ridiculous. The man that got the first premium thought them all right, but those that did not get it, thought them all wrong. Somebody proposed an expert judge; well, he would have to be imported from some other state and probably blind-folded, and then somebody would say that he was bribed before he got there, and we have

been studying on a plan and I will tell you what the plan is, and I think they are going to agree to it, and if there is any one here that has anything better to suggest, I would like to have him propose it to me before I go home.

The plan is this: that every stallion owner that has made the season of 1887, shall deposit five dollars in bank, and the society shall deposit a like amount, and that to remain there four years; it will take four years to get this thing started. After four years they will each year pay a premium. That four years will give them a chance to decide who has got the best horse. They will have a chance to keep a record of the sales during this time, and the horse whose colts sell for the best average will take the first money, and the money can be divided into four, six or eight premiums, and it will be ten dollars for the best horse. I cannot see any other way we can get out of it and give satisfaction.

Mr. Broughton — You want to get sheep men or hog men for the judges.

Mr. Phillips — No, we don't; they are just as dishonest as horse men.

Mr. Whittet — What would you do during the four years?

Mr. Phillips — Pay no more money for these imported stallions. We will drop the premium that we now pay for those imported stallions; we will not pay them any; we will make them show their horses at the fair and will not pay them any money until the end of the four years. Next fall they will deposit for the season of 1888 and next season for 1889, and at the end of the four years they will begin to get their premiums back. If any one has a better plan for this work I would like to hear it before I go home.

PRACTICAL EXPERIMENTS IN DRAINAGE.

BY JAMES H. FOSTER.

I am a believer in drainage. I have come to this belief by actual experiments in drainage. From my own experience I *know* native marsh land can be made largely more productive than it is in its original condition; that it is much

easier to work upon and crop; and that in its appearance it is much more pleasing and attractive.

I believe that by proper and judicious drainage much of the land in Wisconsin which now produces at best not more than half a crop, can be made to be among the most productive and profitable lands of the state, and instead of being a blotch upon the landscape, can be so improved and so beautified as to ornament the adjacent lands and become gems of beauty and profit, rather than the unsightly and unprofitable waste places they now are.

Not only can these waste places be made to bud and blossom as the rose, by lifting from their bosoms the freight of wealth which has slumbered for ages within the rich mold which has been drowned and soured by an excess of water, but it will add hundreds of thousands of dollars to their value, and will give a contentment and satisfaction to their owners, that will nerve them to higher and better aims and efforts in the possibilities promised in culture and improvement.

Give to the soil of much of our native marsh a chance and it will surprise you with its long-hidden possibilities — but to do this you must give it a chance. A hard, upland, clay soil does not become productive or give its sign of rejoicing in the revelation of its hidden and latent powers until the plowshare has delved down into its bosom, and lifted up to the light and the air, the before unturned sod, or until the clover roots have penetrated its compacted mold and given to it the new revelation and new birth of light and air. And so while our native meadow lands are soaked through and through, like a sponge, with water, making them cold, clammy and unkindly, we can not expect them to bear to us good fruitage; but once you draw off the surplus water and introduce to them the genial influence of sun, and air, and the miracle of change will at once become manifest in the burden of production. In the years ago it was thought that open drains would do the work desired, and produce the results sought for. In some places, and where but little drainage is needed, this *can* be done; but the system is objectionable in many ways. It occupies too

much of the land, and requires too much of labor and time in keeping the ditches cleaned out and in condition to produce passable results. Added to these is the inconvenience of working among these *open* ditches, in the way of cultivation, whether it be with the mower or with other farming implements. This, where light drainage will answer; but where the ground is level and a large amount of water is gathered and remains until the drouth comes in summer time and the water is lifted off by heat and evaporation, or where the earth is filled with water from springs coming out of the higher, hard land, any system of open drainage is impracticable.

To bring such lands into condition to produce well; and to produce every year, and to put them into condition that it can be cultivated, either by plowing and cropping, or by going on to them with mower and horse rake, in securing the grass, there is nothing that will reduce it to a tillable condition, and to uniform productiveness, except some system of underdrainage. What I shall say about drainage, whether of kind, or cost, or of results, will not be *theory*, or speculation; but it will be of *actual experiment*, upon my own farm and at my own *cost*.

I commenced my experiments in the summer of 1878. At that time, all that I knew of drainage was in theory, gained by reading; and in conversation with a few men who had done a little at underdrainage. I am unable at this time to tell how much I have done within these ten years. As nearly as I can remember, there is between seven and ten miles. The cost has been somewhere between eight hundred and a thousand dollars — and is all on a quarter section of land. I am satisfied that the investment is a paying one; so much so, that I am just waiting to catch my breath, and get funds enough that I can spare from other farming enterprises, to complete the work begun, by putting in from two to three miles more.

From the discussions in the "Wisconsin Farmers' Institutes," during the past two or three years, I caught another "craze," (you know that one who is inclined to be cranky, and a catcher of crazes is wonderfully susceptible

to notions and new things—and will catch everything to which they are exposed), and I caught it—and “caught it bad,” and the disease would not let *up*, until under the advice of my consulting physicians, I rested the drainage for a while; and constructed a “*silo*,” as per the advice and specifications of that cranky Ohio granger—John Gould.

In the drainage on my farm, I have put in three kinds of underdrain. I consider each of the three systems meritorious; but the relative merits will best appear as one is putting in their drain; as under certain circumstances, and in certain places one kind will be found to be best; while in other circumstances, and places, one will learn to choose the other.

I will designate these three kinds: board drain, tile drain and sod drain. The board drain is made with six inch boards, or common fencing, and consists of three boards. It is made by taking say from four to five pieces of lumber six inches long and from two and one-half to three inches wide; saw down at each end, one inch back from the end, half through the piece, split these ends off, and setting upon edge two of the boards four inches apart, put on the strips thus prepared, and nail to the two boards. This will leave you a box, of two boards, held together on one edge by the strips mentioned. The shoulder of a half inch on each end of each strip, will, when nailed, be a support, as you will see, to the box, and keep it from being pressed together by the earth when put into the drain, and filled with the earth again. Now, put your third board upon the strips or cleats and nail fast. The board side last mentioned will be the top when put into the drain, and will make a three-sided box six inches wide, and six and one-half inches deep, and will have a half-inch opening the entire length, between the top board and the two upright boards. Through this opening the water finds its way to the inside of the box after the earth is filled in, and is carried off to the open stream or to some larger box which is used as a “main.” It is well to nail upon the under side of the box two or three strips as a prevention against the lower part being pressed together by the earth. This, you see, makes an opening for

conveying the water, of four by six and one half inches; and makes during the lifetime of the lumber an excellent drain. In places where there is a large amount of water, and in soft and springy places, where the ground is soft, and at the end of your drain, where it empties into the main stream, this kind of a drain is preferable, as also in shallow drains of from one to two feet in depth.

In using tile I have used largely of the two and a half inch size. I drain into a small stream, made up from the springs along my marsh, and which averages from one and a half to two and a half feet deep. This stream runs angling through the quarter section. I opened it up to its full depth, from four to five feet wide. This makes a good outlet for the drains, and as it is in about the middle of the marsh, with the land rising gradually from either side of the stream, it permits me, on a large part of the marsh, to get from three to three and a half and four feet in depth, within a few rods of the stream, and securing a good descent for the water. For land thus situated, tile of the size mentioned, will carry off the water, unless in excess, for a distance of from forty to fifty rods. Mine would not average more than twenty-five rods in length, and I find the two and a half inch tile ample in size.

The sod drain is entirely different. In digging a drain of this kind, if for a drain of three or three and one-half feet deep, you would open the top, say twenty inches across at the top; or wide enough to work in easily to a depth of two and a half feet perpendicularly, then with a small spade (made for the purpose), four inches wide and twelve inches long sink your ditch another foot, then with what I would call a spoonbill, a half round, gauge-like implement, with a long, handle, (you may call it a spoonbill hoe), clean out the bottom; and where there is water let the water settle the question of fall or grade, taking care that it be smooth on the bottom, and free from low places or hollows, so that the water will run freely. When finished you have a ditch, three and one-half feet deep, and being twenty inches wide at the top, and say ten inches at two and a half feet deep, with a four by twelve inch trench below that. The sod is

so cut at the top as to form a wedge twelve inches deep, which is put into the ditch dug as mentioned; this would be pressed the wedge side down into the small trench, and trodden down as far as it can be forced by tramping, and then the ditch filled, being well tramped while filling. This will leave an opening for the water, four inches wide and from six to eight inches deep. A ditch like this made by an expert, honestly and carefully made, with the wedge-shaped sod, taken from ground well filled with strong, fibrous grass roots and thoroughly tramped, will carry off a great quantity of water, and will be found to be durable, more so, I think than the board or box drain. I often go to look at a drain of this kind, that was put in about the year 1860, and as far as can be seen is as good to-day as when finished.

I have upon my farm from four to five miles of this kind of drain, and where the sod was good, and where full depth could be got, and well made is all that I could ask.

Where you desire to use the land for pasturage, I would put in a section of the box drain, where the drain empties into the stream. The drain is usually shallow at that point, and if of sod drain, liable to be tramped and filled up; or if tile, the outer tile will be broken off and the discharge closed up. The box will stand. So far as I know, there is no rule for distance between drains. That depends upon circumstances, and the person draining must exercise judgment, and in many cases, "cut and try." If you can cut your drains three and one-half or four and one-half feet deep, the drains can be as far again apart as where the drain is cut but two feet deep. Mine vary; some are two, some three and some four rods apart. A box drain would cost for the lumber, at \$15 per 1,000 feet for lumber and nails, say thirty-seven cents per rod, for digging and covering twenty cents per rod, and you board the ditcher, making cost fifty-seven cents per rod, and if dug four rods apart would cost \$22.80 per acre. A two and a half inch tile would cost per rod, fifteen cents, digging and filling ditch twenty cents per rod, total cost per rod thirty-five cents. With drains four rods apart it would cost to drain an acre, \$14, and for two rods apart, \$28 per acre. The sod drain is the cheapest. Where

it is good, free digging, and free from hard clay or stone, it can be put in at a cost of twenty-five cents per rod, making a cost of \$10 per acre, with drains four rods apart; or \$20 if two rods apart.

Lands drained in this manner will begin to show the good effects in enlarged production the first year, but it will take from two to three years for it to arrive at best conditions. It requires time for the water courses to become established and well defined, in which the water is carried in what may be termed the pores or veins, through the soil into the tile or drain. If you would secure the best results you must continue your work now upon the surface. If the ground has become covered with bogs, by reason of having been pastured and trodden by the stock, this surface should be made smooth. It is easy to say this to you, but I know by experience that it requires work to do it. The best time to do this is in the fall. Pasture as closely as possible during the summer so that there will be no tall grass standing. In many places the work of smoothing can now be done with a sharp toothed and heavy harrow; but where the bogs are large and filled with long and strong fibrous roots, the ground will require scalping, as we call it, which is simply cutting off the bogs with some kind of a bogging hoe, preparatory to smoothing with the harrow.

After the ground is bogged and thoroughly harrowed until it is level and smooth, sow it heavily with mixed grass seed. It will not come into a good condition of productiveness at once, for in some places, and particularly in places where the soil is a deep, black muck, it will require several years to domesticate it, and prepare it to grow grasses or anything else well. But keep up courage and persevere in effort, and each year scatter on with a liberal hand a well selected variety of grass seeds, and in due time you will reap, and not faint, for bountiful crops will be the reward of endeavor.

Much has been written and spoken, in the last few years, in favor of seeding lands into permanent pasturage. My experience is, that there is no better, or more productive pasturage, than are the marsh lands; drained, smoothed

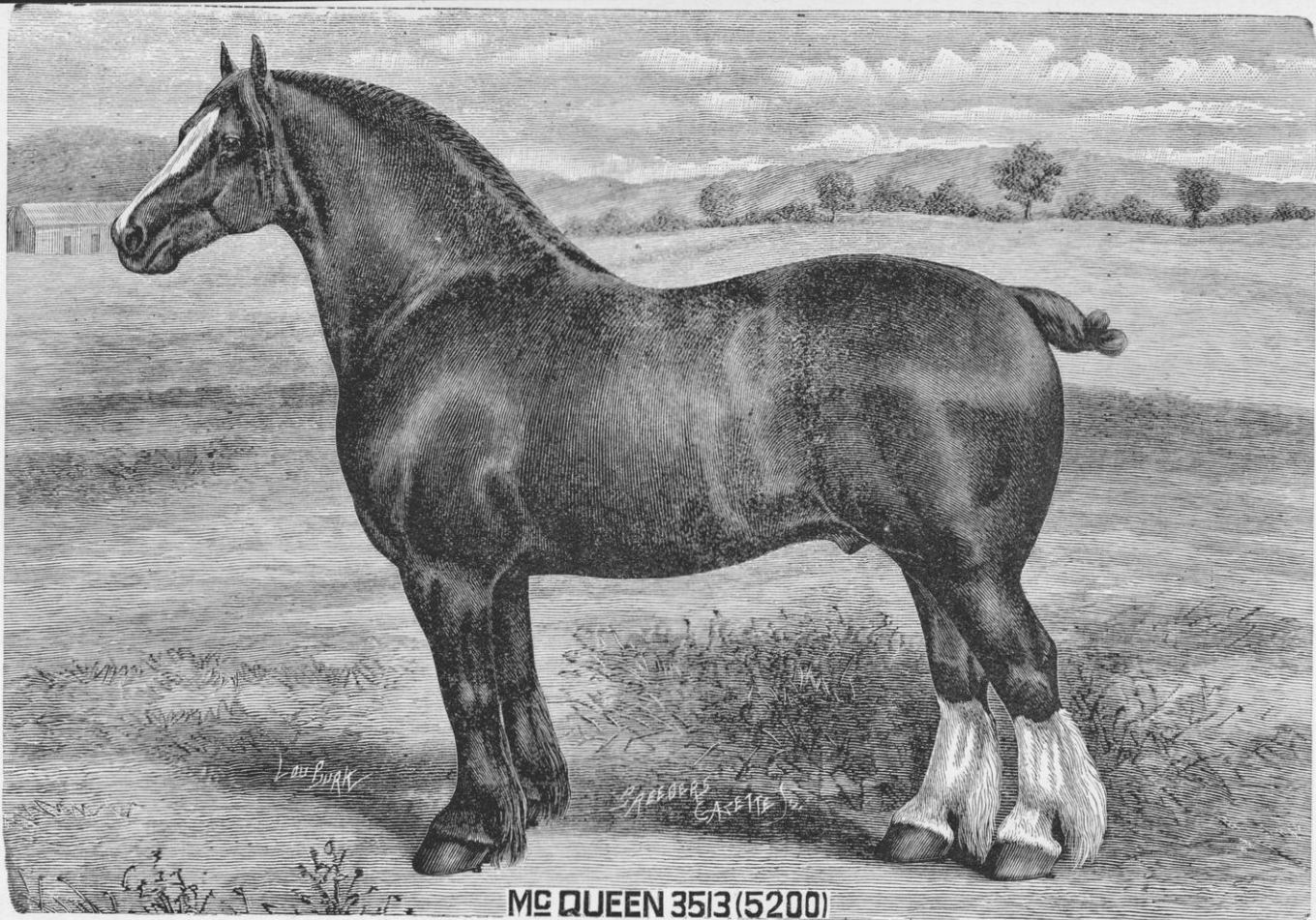
and seeded, as I have described, and as a general thing, they are better for grass, than for any other crop (that being the most natural), and as pastures are said to grow better, when pastured for years, so much the more is it the reason why these lands should be as far as needed made into permanent pasture lands. During the drouth of the past two years, when the pasturage was entirely burned up upon the up lands, my drained marsh lands furnished a large amount of pasturage, and of good quality; and was best where it had been the longest drained, and had the most care in seeding. We are every year keeping more stock, and are going to keep still more, and where farmers have marsh lands, instead of bemoaning their fate, and saying unpretty words about their useless marsh, let them drain it and prepare it for pasture — and in all seasons whether dry or wet let it become the companion piece, and the adjunct of the silo, and from the succulence and the sweets of the springing blades of grass and the ensilaged corn, transmute those juices of mead and hillside through the generous giving of the cow into not only yellow butter but into yellow gold and to all of the comforts which it can bring into the farmer's home.

Drainage has paid me, and I can cheerfully commend it to you. To secure best results, and make it ample in its returns it must be done well. When done well, the labors done upon the drained lands can be done with ease and pleasure.

In the early days there was some of my marsh that I could not mow with machine unless the horses were shod with clogs or wooden shoes, and then the driver needed to have his patience shod with a preparation of peace larger than comes ordinarily to the unregenerate man. In those earlier days and before the advent of broad tired wheels and the more kindly drain, I am fearful that there were some words thought and perhaps spoken, that would not look well in the dictionary, or the missionary tract. But now, with it underdrained I can ride the mower or the wagon and sing in feeling and rounded voice:

“Through fertile vales, and dewey meads,”

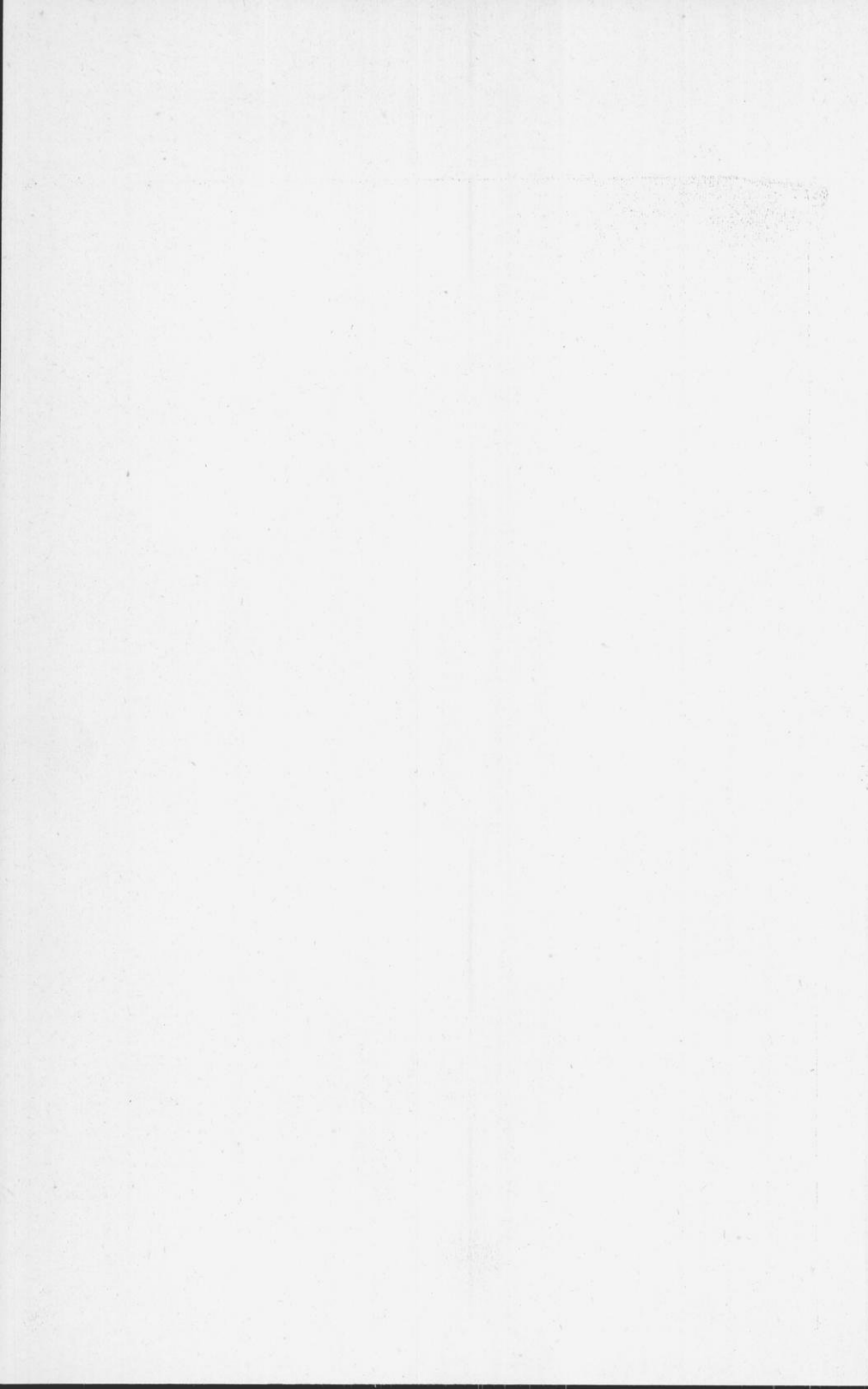
“My light, and joyful steps He leads.”



MC QUEEN 3513 (5200)

THE UNBEATEN CLYDESDALE STALLION.

Property of R. B. Ogilvie, Madison, Wis. S.



In other words, it is now a pleasure, to labor upon land where once I ventured with fear and trembling; and find to my great satisfaction that because of the benefits derived from being underdrained, the annual product, one year with another, will not fall far behind the cultivated upland; and that too, without the yearly cost of cultivation, or foreign fertilizers, while in quality and quantity it bears the burden of the crop, as well as forty years ago.

Wisconsin has many thousand acres of land belonging to good farms, which are now almost wastes, which could be, and ought to be underdrained, and which, if done, would add largely to their productiveness and value, and greatly increase their beauty and desirability.

I can scarcely formulate to you my words in such a manner as will express the satisfaction I have in looking out upon, and walking over, the once unpleasant and forbidding grounds, which are now transformed into fields of fertility and beauty.

What I have done without experience, and with limited means, you can do and more. If in my plain and unvarnished way, I have been enabled to present this important subject in such a manner as will awaken thought and inspire to action, until blooms shall come to occupy the place of blotches and bogs; where there shall be meadows green, instead of mud and mire; if your winding vales shall come to teem with meadow and pasture grasses, and shall glow and smile before you with their waving wealth of emerald verdure, beautifying and adorning the farm; by adding to your purse, and by making dearer and brighter the home, of you and yours; I shall be amply paid for writing out, and telling to you, the story of my experience in drainage; where I have builded and keep my home, and which for more than four decades, has been the refuge and shelter of me and mine.

DISCUSSION.

Mr. Hoxie—How do you join the ends of the tile together?

Mr. Foster—Just get them together as tight as you can and that serves to let the water in. It is better always in using this kind of drain to put on a little hay or straw in the first place, and after the hay or straw has decomposed you will find the drain will work very nicely in places where there is a large amount of water.

A Member—Suppose you strike quicksand, what then?

Mr. Foster—Then I put in a section of this board drain.

Mr. Briggs, of Elkhorn—I would like to ask the speaker how he likes the silo?

Mr. Foster—I like it so well that I wish I had more of it. It is meeting, so far as I can see, every expectation and every promise of those that advocate it. I expect to be as cranky as my neighbors thought I was on the subject when I commenced to build it.

Mr. Briggs—Do you feed ensilage to horses?

Mr. Foster—I feed small quantities mixed with other feed. In large quantities I do not know how it would operate.

Mr. Briggs—Do you think it would be good for feeding young horses generally?

Mr. Foster—I have not seen any bad results from feeding it. I have not fed it in large quantities. I put in my feed, corn stalks and straw together. I have straw that has been cured in the barn and kept dry and clean, and I cut it with the corn fodder, mix it about half and half and it makes good feed for horses.

Mr. Broughton—Isn't the silo like self-righteousness, that you never can get enough of it?

Mr. Foster—It operated that way with me; I never had but little of the first and I never had enough of the latter.

Mr. Broughton—I am at a loss to know whether your ditching arrangement is a dry joke or dead earnest; whether you are getting off a dry joke on us or whether you are in dead earnest.

Mr. Foster — I am in dead earnest. It is the live truth, and the live water runs down the farms, and you would see the difference if you were there now from forty years ago.

Mr. Broughton — I think I might be patriotic enough to make the ditches, and if Brother Beach would furnish the money it might be made profitable.

Mr. Beach — I will furnish the money if you will do the digging. (Applause and laughter).

The Chairman — Do you think it best to put in that wooden plank when you get the tile as cheap as it is now?

Mr. Foster — I think not. As long as we are where timber is cheap, and there are many places in putting in a drain, you need this kind of a drain.

The Chairman — At the end of the drain?

Mr. Foster — Yes, sir; and at places where there are quick sands, as that gentleman asked me.

The Chairman — That will work with tile.

Mr. Foster — Yes, but in places where the tile is used it may become depressed at one end and raised at another where springs come in and it will spoil your drain for carrying off the water, and in that case I would always put in a stretch six or eight feet of this wooden drain to carry off the water.

Mr. Ladon — How much descent is necessary?

Mr. Foster — Just enough to carry off this water; as I said in this paper, let the water decide that question itself. Just let the water run easily in your main ditch.

Mr. Ladon — How much has land got to be worth an acre before you can afford to do it?

Mr. Foster — The land in my section is worth all the way from fifteen to sixty dollars an acre, and the land in its original condition was not worth half price. Often if you drain at a cost of ten or fourteen dollars an acre it is cheaper than to go out west and look after land, and mortgage your land for money to come back with and buy a new farm at home near where you started out.

Mr. Adams — Couldn't you afford to borrow money at ten per cent. and put it into drains?

Mr. Foster — I think I could. I think any man could. I

would not advise any man to borrow money at ten per cent. because he can get it for less, but I think a man could well afford to do it. I live in Winnebago county, and it is near our Northern Asylum, and when I commenced this drainage they thought I was crazy, and some of them thought it was best perhaps to have Foster sent to the asylum; that all the money he could get or earn or borrow he was putting into drainage and ditches on his farm, but that same class of men now like to go down when I am at home of a Sunday and walk over these flats of mine just as well as I do. Let me tell you a little story about that: My youngest daughter went down to Texas a few weeks ago, and after she got to Texas her mother wrote to her that I had opened a silo and it came out very nicely, and she wrote to me and she says: "Pa, I hear from home that you have opened a silo and it came out well" (I commenced the first silo in my section of country,) "so it shows that your head was level again; and now you can put on your slippers and go down on the marsh." (Laughter and applause.)

Mr. Hoxie—Prof. Henry has had some experience on the experimental farm. He is here, and I would like to hear from him. I think he can throw some light on this question.

Prof. Henry—There is another speaker to come on and I do not wish to occupy the time under the present conditions; but I want to say this, that the time is coming when you will sit in this room at these agricultural meetings and will be just as interested over this question of drainage as you were a year ago, when Mr. Haaff was talking about this question of dehorning. In going about over this state I have had this thing in my mind, and am gradually getting our experimental station ready to test the question. I hope at some time in the near future to be ready to report. We have spent a few hundred dollars on the experimental farm and the results are wonderful, and it is coming, as I say, in this state, and it will not be long until millions of dollars are put in the ground in the state of Wisconsin, in these tile drains. These tiles will not be made of boards but they will be clay pipes, the ordinary round clay pipes. We will say that Mr.

Foster's way of doing things was the pioneer way; was as a wagon and ox team were compared with the railroad train. The wagon was good enough in its day, but the round simple clay tile will not only last for your life but the lives of many. In fact, for hundreds and thousands of years this tile will stay there in perfect shape if properly laid. Now as to the cost. Take marsh land worth \$5 an acre, and if you put in \$30 in laying clay pipes your land will cost \$35 an acre. The interest on that thirty dollars at six per cent. would be one dollar and eighty cents annually, and we must get a return of one dollar and eighty cents additional to put it back. At ten per cent. interest we must get three dollars addition each year from each acre. Now I think it admits of demonstration that the land can be made to pay more than that.

On part of the experimental farm, on part of our land we had for three successive years water flow over our ground; we had from one to three acres of water standing on the land which would come from the adjoining land. We lost first a crop of barley and later two crops of corn, and the year after that land was tile drained we secured sixty-eight bushels of shelled corn and two tons of fodder from the same land. Now, to a man who has lost crops, and then has expended say thirty dollars an acre, it does not need to go far to show that he has made a good investment. Talking with a Jefferson county farmer, who a few years ago finished draining forty acres, I said: "What is it worth to you?" He said, "I would rather have my money in my land than loan it on a neighbor's farm at ten per cent., because," he says, "I don't want my neighbor's land. I would rather have my farm close about me. I might have to take my neighbor's farm on a mortgage, but as it is I have my money here and it is safe and I never have to look for a place to loan it."

Mark my words, I do not often lead the farmers of Wisconsin astray, at least, I do not mean to; but the time is coming when we shall all be as interested in this question of drainage as we have been in the question of dehorning today, because it will be a vital question; and to the young

men I would say, do not buy these pine lands in the north; if you can buy any marsh lands around here do not go into Spink county, Dakota, of which our friend talked so finely, but stay and watch for some of that land that is here at home. Buy that cheap marsh land, drain it as fast as you are able, and you will have a better farm, a farm that will cost you less in the end than to go up and buy land that will cost nearly as much an acre for clearing as it will to drain an acre. The first cost of that land is very small, and that is where the money is to be made to day.

A Member — Don't you manure this land?

Mr. Foster — No, sir, not one load of manure.

Mr. Johnson — What was your ensilage made of, corn or grass?

Mr. Foster — Made of what we call fodder corn.

Mr. Johnson — I have not understood whether the ensilage was made of corn or grass. I have been in England recently, and I made considerable inquiry about ensilage, but they make their ensilage largely of grass; in fact they have no corn, and they make it of grass. They had exhibits at the Agricultural Fairs in London and Birmingham, but this industry is in its infancy there, though growing in favor. I talked with one farmer who had used it for four years wholly for his cows. He had a dairy of twenty or twenty-five cows, and he said he could keep three cows with ensilage cheaper than he could keep two before by making the grass into hay. He takes it right up after the mower and has a man follow the mower and take the grass and haul it right to the silo. His silo is constructed with three walls clear, making one open, and he keeps it very well in that way. He puts the grass in, fills it with about three feet of grass and lets it stand two or three days until it heats to about 150 or 160 degrees, then he puts in three feet more and lets that stand about two days more, or three, until it becomes heated, and he says that makes sweet ensilage. He said he did not know but the sour ensilage was about as good as the sweet, but he rather had a liking for the sweet so he made his sweet. I do not know whether

ensilage is made here in that way at all, or whether it is considered proper to make it that way.

The Chairman — It is made that way.

THRIFT.

BY F. A. UPDYKE, BEAVER DAM.

I know it must seem presumptuous for one of my age to address any audience of this size, much less an assemblage of farmers. Nevertheless, having been requested to appear on the program, I have consented, not without many misgivings as to my ability to say anything which you with your greater experience and superior knowledge do not already know.

I do not hope to express any thoughts with which you are not familiar, and which have not been presented to your minds many times, clothed in much finer language than I can employ. Still, I do hope that I may drop a word or two, which, however commonplace, may set some one to thinking and result in usefulness to him. If I may attain this result, I shall feel that I have not appeared here simply to "fill up" the program.

I wish to state at the outset, that perhaps I may give utterance to statements which do not apply to farmers of Wisconsin. If so, I ask that you will pardon me. My acquaintance with the farming class has been almost entirely limited to the east. But I have inferred that what is generally true there, is to a certain extent true here. I, for the most part, was brought up on a farm amidst the rocks and mountains of northern Pennsylvania.

For two years after I left the farm, I still had a good opportunity of becoming quite thoroughly acquainted with the condition and customs of the farmers of that section, for I was at that time clerk in a village store. My acquaintance with the farmers of Wisconsin has not been very extensive. Still I have made some observations which make the farming class here quite different from those of the east. Although the farmers of the west excel those of the east in

some respects and those of the east excel those of the west in certain others, yet the subject of thrift in some of its phases is equally applicable to both.

It would be useless for me to enter upon a discussion of what thrift consists. It is too well known to every one. We have no trouble in distinguishing a thrifty from a thriftless man. Thrift does not fall to us by chance. It is not a natural quality of our human disposition.

Yet we have inherent qualities which, if rightly developed, will acquire for us this excellent trait; and it will become so firmly implanted within our natures that we may think it to be our natural disposition. Thrift must be cultivated until it shall become a habit. Then it will trouble us no more to exercise it than it does to move our limbs in walking. Every good thing brings a reward; the reward of thrift is observed by all. We can not fail to see it in the lives of those of our acquaintances, in the lives of merchants, statesmen and writers, this feature manifested. We have such noteworthy examples as Washington, Lincoln and Garfield, who exercised this rare quality throughout their entire lives, making the most of their time, opportunities and resources.

The subject of thrift should engross the attention of the farmer greatly, for to no other class of people does it pertain in so many varied forms. The farmer's lines of work and resources are so diversified that he has occasion to employ thrift in many directions. I have been pleased to observe the thrifty condition of the farmers of Wisconsin. I think I can safely say that with no state would you compare unfavorably.

I have noticed particularly the interest that is manifested in the county and state fair each year; and also in such meetings as this. When you see farmers taking active interest in the exhibition of their stock and products, and endeavoring to increase their knowledge of farming, you may assume that they are thrifty and making their farming count. I lived within a few miles of the city in which the New York state fair is held once in three years, but I hardly think that more attention is given to it or that the exhibits are better than those you have in this state.

Another respect in which the farmers of the west excel those of the east, is in their readiness to receive and adopt such measures as will aid them in more efficient farming. They gladly accept, and utilize the machinery that skilled labor has laid at their doors if by means of this they may be lifted out of the "ruts" of their ancestors.

Although there are several reasons which make it less practical for all the improved machinery to be used in the east, yet the eastern farmers are far too incredulous. They are too apt to think that the manner in which their fathers and grandfathers were accustomed to farm is the mode which they should follow. If their fathers employed the scythe and cradle to cut their grass and grain, they think they must harvest their crops in the same manner now. If (when boys) they planted corn with the hoe, they think the same to be best now. They will not be convinced that machinery not only saves labor, but that it also saves material. Although this class of farmers may deserve some censure for continuing in the "ruts" of fifty years ago, when right at their side the smooth and easy road may be had, yet we must acknowledge that often times it is better to remain in the "ruts" for a time, than rashly drive out of them without knowing the condition of the road beyond. No one practices thrift as much as he might, yet I think, if the farmers here would practice economy, even as much as do farmers in the east, they would prosper more than they do now. For if a man can live on one hundred acres of land where perhaps one-half of that is too rough for the use of machinery, and can make a living and can lay by a snug sum each year, what cannot you do here in Wisconsin, owning two or three hundred acre farms, so smooth, that machinery can be used on every yard of them? Thrift is the key-note to success with every man, and especially with the farmers.

Thrift may be exercised in many ways. One of the most important of these is the studying of one's resources, that it may be known what is best adapted to this soil, and what to that, in order that your resources may avail the most possible. In no way can the farmer receive as helpful in-

struction in regard to this as attending such meetings as the present and the annual fairs, that he may profit by the experience of others.

Thrift is as applicable to a man possessing few resources as to one endowed with greater. It is even more necessary. Thrift keeps the fence corners cleared and the weeds mowed before they go to seed. That is, it attends to the minutest details. It is easy when riding through the country to recognize those farms which betoken thrift, from the character of the fences, outbuildings and stock. Those who look after the little things are very likely to look after the larger affairs.

It is a point of true thrift to purchase no more than one *needs*, and to make the best use of that which one does possess. The farmers of Wisconsin show economy in their using as few fences as possible. Much time and money is saved by the disuse of fences. The farmers in the east consume a great amount of time and money in fencing their farms in five or ten-acre fields. It has been said that the fencing in the United States costs more than all its railroads.

Economy is commonly overlooked by all classes of people in their purchasing articles that they do not need at all, or those that they may possibly need in the future, just because they are cheap. It is an old maxim, but it will bear repeating, "never buy what you do not need because it is cheap." If you buy an article for half price if you do not need it, it is as much of a waste as though you paid full price for it.

Many farmers, I think, particularly in the west, purchase much machinery that they do not need. Although I do not wish to disparage labor-saving machinery in the least, yet I think oftentimes more money is invested in machinery than the work which is to be done will warrant. Young men beginning farming are not content to begin life as did their fathers; but they think they must begin where their fathers left off. So they straightway buy all the improved machinery that is to be had, instead of waiting until their resources will justify it. The continual improvement of machinery also causes much mischief to the farmers. For

as soon as they hear of some new machine they immediately purchase it, although, perhaps, they may have had the old one but a year or two.

I have many such farmers in my mind, whom I have known, whose yards and buildings were literally full of second hand machinery. Much of the machinery manufactured does not half pay for itself. It is not always best to receive and adopt new machinery immediately, for oftentimes it does not accomplish what the inventor intended it should. It is best to wait until it has been proved to be valuable. Then adopt it. I think the well known rule concerning fashion, will apply equally as well to the purchasing of machinery, "Be not the first by whom the new is tried, nor yet the last to lay the old aside."

Not only is it good thrift to purchase no more than one needs, but it is the best of thrift to care for what one does possess. It has seemed to me, that much thriftlessness exists in this state among farmers, in their lack of proper care of farm implements. Passing through the country here at any time of the year, you may see farm implements lying about here and there, unhoused. The most thrifty farmers I have ever known, have been those, who take care of their plows, hoes, forks and such small articles, as they would a piece of household furniture.

You have heard or read articles, doubtless, on the need of careful shelter for all stock, and this certainly is a big factor of thrift. But it is no less important that all machinery be housed. I think I can safely say, that the injury to machinery out of doors during the winter is greater than the wear of it during summer. You endeavor to get the most out of your cows and horses, then why not so treat your farm implements that they may be long lived. One of the greatest sources of evil to the farmer, and to every other class of men, is the habit of "running in debt." "Pay as you go," has been the exhortation given to men for years and years, and still there is need of its being repeated until every man shall realize its wisdom. The habit of "running in debt," has been the ruin of many a man. No matter how small the debt may be, yet it is injurious to the debtor, for

by this he will acquire the habit, and so will run in debt for larger amounts. It is wrong to buy on the anticipation of future returns.

We censure the clerk who lives up to, or overdraws on his salary. What shall we say then of the farmer, who not only lives up to, but often overdraws nearly all of his year's income.

The habit so prevalent among farmers, especially those of the east, of running store accounts, anticipatory of the coming crops, is a dangerous one, and should be avoided. This is even worse than for the clerk to run in debt, for the clerk is certain what his income will be, while the farmer cannot count on any sure returns, for there are many things which may destroy his crops before they are harvested. How much better it would be to simply buy as one had the money. Then there would be fewer disappointments and sheriff's sales. If farmers would endeavor to lay aside a small sum each year, when a season of drouth or other misfortunes come upon them, they would have something with which to bridge over until better times. The habit of running store accounts is liable to lead one into contracting larger debts, such as mortgaging the farm, for the sake of purchasing more land or something else which is deemed necessary. You doubtless know well how many of these mortgages turn out; how wretched it makes the home, and results at last in eating up the whole farm.

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I have thus endeavored to give you a few factors of thrift which are applicable to the farmer. I will now speak of two or three false ideas of thrift, which are quite prevalent among certain farmers.

Some think that to give a boy who intends to follow farming as a life profession, more schooling than is comprised in the three R's is money wasted. But this is not the case, as we have seen from the example of many of our best farmers. From a practical, financial standpoint it pays for a farmer to have a good education.

Education is mainly to develop the mind that it may be capable of making sound judgments. Now, such training

is just as essential to the farmer as to any one else. Not only will the education of the farmer avail him financially, but it will also be a source of great pleasure to him.

A farmer acquainted with the sciences may derive much enjoyment from his work. His farm is a far better laboratory than the chemist, botanist or naturalist possess.

In the home of the educated farmer you see the weekly newspaper, books and magazines. Home is made more attractive. The inmates learn what is going on in the outside world. It is not from such homes that boys spend their winter evenings in the village store, nor is it from these that that mass of youth come who are ruined in the city. It is rather from those who are ignorant and have no reading except that trashy literature, which gives an unreal aspect to life, and makes daring deeds the only thing worth living for. Make the home pleasant and attractive, and fewer sons and daughters will leave the farm, and those not unless their talents tend in another direction.

I have seen farmers who seemed to think it economy to keep the cheapest stock that could be bought. I know it would be useless for me to point out the fallacy of this idea, for I think that the most of you present know that the best is the cheapest and most profitable. If it be of such vast importance to raise the grade of your stock, of how much greater consequence is it then that you raise the grade of your sons and daughters. Why is it that so many able men have come from the farms of Vermont? It is simply this, that while the farmers there were striving to better the stock of their sheep and cattle, they did not forget to better the condition of their children. Thus their sons, mixing their cultivated brains with the sinews of those granite hills, came forth noble, strong men. There is another strong conception of thrift to which I will allude.

That is the idea which most farmers have that they are not prospering unless they are adding more acres to their farms. This has been the ruin of many. We often speak of farmers in the east as being "land poor," because they own so much land. And it is quite true, for a man can use to good advantage only a certain amount of land. There

are many other ways by which he may increase his wealth quite as well as by the purchase of more land.

After all a man is not the richest or thriftiest in the true sense of the word, who simply has material possessions, be they ever so great.

The possessions will at most only serve him for a few years. The only abiding riches and permanent thrift are those which are obtained through the development of our mental and moral natures. Thrift used in building our characters for eternity, is employed in the best possible direction.

RURAL POPULATION AND THE EDUCATIONAL POLICY OF THE STATE.

BY W. H. CHANDLER, MADISON.

The constitution of the State of Wisconsin requires the legislature to provide by law for the establishment of district schools, which shall be as nearly uniform as practicable, free and without charge for tuition to all children between the ages of four and twenty years.

Pursuant to this provision, laws have been enacted for the organization and maintenance of public schools in every town in the state, through a system of independent school districts.

Of these, counting each school house as one district, there are now 6,113 in the state. Thirty-seven cities operating under special charters, maintain schools in 200 buildings, leaving the number of districts in rural neighborhoods, 5,913.

Again, the number of persons of school age in this state is 556,093, of whom 136,786 reside in cities, and 419,307 in rural districts.

Once more. The number of teachers required to teach all the schools in the state is 7,893—1,107 of these teach in cities, and 6,786 teach in rural districts. The number of teachers actually employed in the schools during the year 1886 was 11,048; 1,119 of these taught in cities, and 10,929 taught in rural districts.

This paper is not designed to be a compilation of statistics, the very sight of which is such an abhorrence to the general reader and average auditor. But in furtherance of my purpose, it seems necessary to present a few which are all taken from the last biennial report of the state superintendent — a report which was manifestly planned with special care to avoid exaggeration in every particular.

The statistics already quoted show very plainly that an educational policy in this state, in order to be acceptable, wise, or effective, must concern itself largely with the rural population, must be adapted to the conditions, and needs of that largest of all classes of our people, which dwells outside of cities, in country homes — must be wisely planned to secure the very best educational advantages possible and practicable under the circumstances amid which the system is to be administered.

My present purpose is to invite your attention.

I. To the educational policy of this state, as embodied in legislation, and its adaptation to meet the needs of the rural population.

II. To the manner and degree in which rural communities improve the opportunities presented by this policy.

III. To the changes which seem called for by the changed conditions of our improved social, industrial and civic life.

Under the first division in this discussion very little need be said. The law provides now, as it provided originally, for local management of school district organization and alterations; every town is to be divided suitably into school districts, and alterations in these districts are to be made from time to time as the growing needs or changing conditions of localities may require. Certain studies are prescribed and required for every school, such as observation and experience have determined to be essential for the foundation of an extended, liberal and practical education in any direction, and indispensable as a preparation for the immediate duties, pursuits, and responsibilities of active life.

To these school districts thus provided for is committed local self-government, and large powers as special corpora-

tions. They elect their own officers, in a general annual meeting, determine the length of terms of school for the year, levy taxes within liberal limitations to purchase sites, to build and repair school houses, to buy text books for sale, loan or free use of pupils, to buy apparatus, and reference and library books, to hire teachers, and they may authorize the borrowing of money, and thus encumber every dollar of taxable property in the district.

These are large powers, with which school districts are thus invested; they seem especially adapted to the needs and conditions of the people of a new state, opening up a new country to settlement, and the institutions of civilization in a free republic.

The feature of independent local management is in harmony with the spirit of our republican form of government, and carries with it great possibilities for reaching all classes with the very best facilities for acquiring that mental discipline, intellectual culture, practical knowledge, and potential inspiration which gives every young man and woman a fair start and an equal chance in the race of active, useful, and prosperous life.

But this is not the only feature of our public school system which is especially adapted to the needs and conditions of the rural population. Careful provision has been made for inspection of teachers, to the end that incompetence and inefficiency may be excluded from the high calling, and that the work of the public school may be directed, unified, and inspired with the best thought, purposes and methods born of the widest experience and observation and the ripest wisdom.

The selection of these superintendents is also committed to the direct vote of those interested, and towns are combined in a larger unit, or supervisory district, that the burden of their support may not be great. The people are thus given opportunity to select the very best men for this work. The importance and imperative necessity for such selection will be apparent with a moment's consideration. The labor of the superintendents is largely personal, unobtrusive, unobserved, and unostentatious. To be most effective it

must be characterized by all these qualities. It may therefore be greatly neglected without attracting attention until the pernicious effects of such neglect are discovered in the low grade and spiritless, profitless, aimless work of the schools, the early withdrawal of young men and women, and the lawless, idle and vicious habits of the younger class which remains. With wise, indefatigable and conscientious supervision, the schools become hives of industry, models of embryo law-abiding, civic communities, with a prevailing sentiment that will tolerate no disorder, idleness or immorality; the arena where are trained in self-control, respect for rights and property, personal and public, industry, courteous demeanor and purity and propriety of language, the future citizen. These habits all will admit are far more important than great acquisitions of knowledge, and the learning culled only from books. This only needs to be remembered to strongly impress the possibilities of the superintendent, and the need of the wisest discrimination in his selection.

Other features of our public school system which commend themselves for their adaptation to needs, are, the system of normal schools for the thorough training of teachers, the system of teachers' institutes for promoting and disseminating knowledge of the freshest thought, inspiring enthusiasm, begetting professional spirit, grounding in wise methods of instruction, training and management, and helping the weak and inexperienced by the counsel and wisdom of the strong and mature; the equalization of the burdens of taxation for supporting schools by a liberal state tax, supplemented by an equal county tax; provision for a township system of school government, for town high schools with special aid from the state, and for a simple yet effective system of public school libraries, at a very slight cost to any community. The mere enumeration of these must suffice for the moment while I pass to the consideration of the second topic indicated, for a brief discussion, viz.: The manner and extent by which the rural population have availed themselves of the advantages of this system.

In this paper I am purposely ignoring consideration of cities. In these are concentrated large wealth and population, great intelligence, an all pervading local pride, an imperative necessity to provide for all classes, not excepting the juvenile class. Here is almost invariably found a prevailing public sentiment in favor of the best possible public schools, and here by special provisions of charters, has grown up a system of schools peculiar to themselves, involving large expenditures for material conveniences, and illustrative appliances, the best available instruction, the closest and most intelligent supervision, and division of labor and long terms of schools.

I simply remark in passing, that these things are so because the opportunities at hand have been made use of, and where any were lacking they have been brought into being and made to contribute to the dominant spirit and purpose.

It is not my purpose to dwell upon the contrast of this condition in country districts very much, nor to force the blush and sense of sin by reciting in detail the bleak, isolated location of multitudes of country school-houses, constructed with no regard to proper or even sufficient means of heating or ventilation, supplied only with unseasoned fuel covered with the snows and saturated with the rains of our inclement winter weather; destitute of blackboard, map or chart; with no separate out-houses for sexes, or if present obstructed in access by drifting snow, or destroyed by the prevalent vandal spirit, or unfit for use for nameless reasons; with little children suffering in their thirst until driven to munch the snow and ice, or trudge a fourth or half a mile to the nearest source of supply for water. Neither do I care to linger upon that careless, thoughtless, criminal neglect, which in order to save a few cents in taxation will suffer the employment year after year of persons to teach who have power neither to instruct, to train, or to inspire in pupils the love of knowledge, the ability to study, or any adequate sense of the sacredness and value, or the means of preserving the health and normal activity, of their bodies, their mental faculties, or powers of soul.

These are not pleasant pictures to draw, and while still

altogether too frequently found, are becoming less and less in number. Where this neglect exists it is no wonder that good teachers will not engage, young people will not remain in the school, and intelligence, thrift, good order, progress and improvement in industrial enterprise can not be expected to abide.

My main purpose is not criticism, but helpful suggestion, and to this I am very glad to turn.

We hear a great deal in these days about the need of mixing brains with farming, of directing intelligence, trained, disciplined intellect, to the business of agriculture. The world, it is said, is waiting to pay handsomely for better butter and cheese, better beef and pork, better horses and sheep; and old mother earth is groaning in misery, waiting for wise men to apply better methods of culture, better systems of cropping, relief from surplus water, and ignorant treatment generally, that she may reward the husbandman a hundred fold for substituting sense for sacrilege in her tillage. Many of us are too old to learn to do this. We shall go on in the old ways of the fathers, and be gathered to them in our poverty in due time. But there is hope and possibility for the generations to follow. Let us give them a chance. How? Send them to college? That is a dangerous practice for the farm. Four or five years absence from home, the fascination and allurements of professional and business life, wean them from the old love and enthusiasm for calves and colts and lambs, from growing crops, harvesting, haying, and the hard toil, horny hands and rough and wearying contests with adverse forces of nature which these imply. How then? Keep them at home, in contact with the homely labors of farm life. Equip them with more ability to cope with adverse conditions of earth and air and storms, and with all that hinders or obstructs the highest and best development of animal or vegetable life. Yea, breed in them a high purpose to know how to make all elemental forces conserve their own good. Give them trained intellects, disciplined and well stored minds, through the public school. Make these better, very much better. They

can be made better. They ought to be made very much better. Do you ask how? Listen.

Why do all of our best teachers go to cities? They pay them better; they make their surroundings pleasanter; they furnish them facilities for doing good work. If we would keep them we must pay them more; we must increase the supply by making it an object for competent persons, with the gift of teaching, to prepare for and enter upon the business; we must not only profess but absolutely show an appreciation of the work of the public school.

The school-house used to be the nucleus of all intellectual and social activity for its neighborhood. One or two evenings in the month saw it swarm with young and old, male and female. The spelling exercise, the declamation, the select reading, the debate, the discussion of public affairs, all through the long five months' winter term, were kept up with vigor, instructing and training the young, vivifying and quickening the mental alertness of all. The teacher was strong in leading, participating, directing. The innocuous desuetude into which this practice has fallen, is lamentable. The school has suffered directly and indirectly by the change. Less is expected of teachers and pupils, and they do less. Let us revive the custom. Farmers' institutes and farmers' conventions are good, and do good, but their good would be increased a hundred-fold if we filtered their proceedings, wise and otherwise, through the local lyceum. Let us first of all then demand and secure teachers of strong personality and high ability, and by all suitable means make it an object for them to come to our service in the country schools.

Again, in 1885, the legislature enacted what is known as the free high school law. This was designed to encourage the establishment and aid in the maintenance of high schools in towns having only ungraded district schools. Twenty-five thousand dollars annually was appropriated from the general fund; each school was proffered aid to the extent of one-half the amount paid for instruction, not to exceed five hundred dollars in any instance. Not less than three months of school in the year was required, the teacher

was to be a graduate of college or normal school, or hold a high grade of certificate upon special examination. Any town could establish such a school when twenty-five pupils were found competent to enter upon the course. Two or more towns could unite to maintain the school.

It was hoped that many rural neighborhoods would be induced to organize schools for the advanced pupils in the various district schools, employ a competent teacher, and thus afford the advantages of better instruction and higher course of study without the expense and inconvenience of absence from home. How has this hope been realized? To what extent have the rural population accepted this opportunity, and proffered assistance. One hundred and forty schools have organized under this law, just three of which have been established in strictly rural communities. Three hundred thousand dollars have been raised and disbursed for this purpose since the law was passed, every dollar of which except the insignificant amount of two or three thousand dollars paid these three schools, has been paid to communities already enjoying a graded school system, with longer terms of school, better teachers and closer supervision than rural citizens enjoy. It was hoped that the best features of the graded system by this means would be introduced into at least one-half of the towns of the state within ten years.

That the separation of the half dozen advanced pupils in each of the district schools would not only give them the advantage of more and better instruction adapted to their needs, the enthusiasm and incentive which comes from larger numbers and laudable emulation, but that those remaining in the district schools would enjoy the advantages of more personal and increased attention of the teachers thus relieved from the exaction in time and effort which the small but always present classes of older pupils required. But this hope for the little ones has perished with that for the larger ones. I have already given you the data from which to determine how few have thus been benefited. The rural population has been content to pay taxes to support high schools in populous cities and large villages, and when

occasion required, the additional expense of tuition, board and special outfit of clothing, as well as loss of daily help, in order to send the boys and girls away to attend these very schools.

In 1887, the legislature supplemented this provision for high schools with special tender of annual aid to schools in towns or districts having no graded schools; the same provision of assistance was made and the same amount—twenty-five thousand dollars—was annually appropriated. Under this stimulus the three high schools already mentioned have been established. It remains to be learned what the years before us will reveal concerning the use rural communities will make of this new opportunity.

All education may be said to consist in acquisition, drill, and inspiration. No one of these elements can be safely omitted. That school that begins and ends its influence in the school room, however excellent that may be, is a stupendous failure. The most general and most accurate test by which to determine the potency and value of a school in its power to inspire, is the love of reading begotten in pupils. Failure here means failure to equip with any adequate ability to increase knowledge, to promote mental growth and discipline. Recognizing the imperative necessity for help in this work, recent legislation has provided a system of public school libraries. Not a system for a general public library in every town, but a strictly public school library, to consist of such books as will directly supplement the work of the school-room. By a system of exchange between districts, periodically, a small amount of money is made to do a large amount of service. The indications are that this provision is to be more generally and quickly adopted than most measures that have been provided for country schools. I mention it here merely to call attention to the provision, and to commend it to the hearty experiment of every neighborhood.

A single further suggestion will close this already too prolonged discussion. For many years we have had upon our statute book as a permissive policy, the township system of school government. This contemplates that each

town shall constitute one school district, with a suitable and sufficient number of sub-districts to accommodate every section with school facilities; that each sub-district annually elect a clerk, and these clerks constitute a board of school directors for the town, having charge of all the schools. This board elects a president, vice-president, and secretary, who constitute an executive committee, having specially in charge the duty of carrying out the behests and directions of the general board of directors, which holds but two regular meetings annually; the secretary is the executive officer of the board, and the local superintendent of the schools.

Time, or rather the lack of time, forbids any attempt at discussion of the merits of this system over the independent district system, or to relate how advantageous it has been found in other states. You will pardon just a sentence by way of suggestion.

There are a thousand towns in this state, each having on an average six school districts. That means eighteen thousand men for school officers, and a very few women — busy men with little time to give; men with little taste or fitness to supervise or manage schools; many mercenary men, seeking and obtaining the positions for personal advantage.

I have said we need close and careful supervision of our schools. This is impossible by one county superintendent with from one hundred to two hundred and twenty-five schools under his care. This system supplies the lacking local supervision. We need the best features of village and city graded systems in our district schools, and town high schools; this system affords the best possible facilities for accomplishing these results. We need to foster measures for greatly increasing the effectiveness of direct school work, for enlarging the range and promoting the habit of general reading, the inspiration to inquiry and research the drill of mental faculties, the direction of intellectual activity, begotten in the school-room. No better means has yet been suggested for these ends than the township system. Add to this, the removal of all the contention and strife over school district boundaries, and the attendance of children in districts where they do not reside, made inevita-

ble by the necessity for forming districts with reference to taxable property rather than the convenience of school population, and we have an incomplete but formidable list of suggestions in favor of the system which should command earnest and intelligent consideration.

My concluding division must consist merely of an enumeration of suggestions herein made, as changes we greatly need in rural localities to meet our changed and pressing needs.

1. Great care and discrimination in selection of superintendents of public schools.
2. Much less of neglect and inattention to the material, moral and intellectual conditions and environments amid which our children spend their early school life.
3. A higher grade of teachers, and a reinstatement of the district school-house as the nucleus of social and intellectual activity, and training in civics and the art and habit of public debate.
4. Town high-schools.
5. Cordial co-operation in sustaining public school libraries.
6. The township system of school government.

These are not changes calling for largely increased expenditures of money for school purposes. Very little more in the aggregate need be expended than is expended now if every one of them were inaugurated. But they represent the difference in results between success and failure, between worth and worthlessness. They represent a hundred per cent. increase in the value of the schools in three-fourths of the towns of the state immediately. They represent in the near future, better farmers, better mechanics and tradesmen, better citizens, better homes, better society. Let us have a genuine revival of our faith in public schools, in rural communities, and in our efforts to work our excellent educational policy for all there is of possibility for good in it, even at the cost of time enough to attend school meetings, discuss desirable changes with our neighbors, and see to it that no upas tree gets root side by side with the tree of knowledge.

OLD ENGLISH AGRICULTURE.

BY PROF. A. O. WRIGHT, MADISON, WIS.

The present system of agriculture in England is well known. The landlords let the land to tenants in good sized tracts, on long leases for a cash rent, and require in the leases very much such a system of "intensive farming" as our farmers' institutes are teaching the farmers of Wisconsin.

But for more than a thousand years, and up to about one or two hundred years ago, a very different system of farming was employed in England. This system is so curious and so little known, that I may be pardoned for taking some of your time in describing it. Most of it was unknown to historians till within about ten years.

There are four things of special interest in this system — the fixed rotation of crops, the very peculiar division of the land, the system of mutual help in ploughing, and the title of the tenants to their holdings.

I—The fixed rotation of crops was a very curious arrangement to keep up the fertility of the soil, and a successful one. There is a great deal of land in England which has been cultivated probably two thousand years without rest except that given by the rotation of crops, and which to-day produces more to the acre than any land in Wisconsin. And all the eastern and southern part of the island has been cultivated ever since. We cannot trace the system of rotation of crops as far back as that, because the few Roman writers who say anything about ancient British agriculture, do not stop to describe what was so familiar to their readers as a rotation of crops, which the Romans always practiced. But they do say that the Britons used marl for a fertilizer, because that was a novelty to the Romans. But when we get down to about the time of Alfred the Great, and from that time on, we have plenty of proof that the "three field system" was in use, just as it existed down to a very recent time.

The three-field system of rotation of crops was as follows: A field sown this year to fall grain would be sown to spring grain the next year and lie fallow the third year. Exactly one-third of the ploughed land would each year be given to fall grain, one-third to spring grain, and one-third lie fallow; and the crops would rotate always in the same order. The old words for these were, *tilth corn*, *etch corn* and *fallow*. *Tilth corn* was wheat or rye and was always sown in the fall on fallow land ploughed that fall. *Etch corn* was oats, barley or beans and was always sown in the spring on last year's *tilth* land. *Fallow* land was always last year's *etch* land now used for pasturage. Barnyard manure was always used as a fertilizer just as it is used now. Marl was used in those localities where it paid to do so. The fallow land was generally used for pasturing hogs and sheep and was thus fertilized.

We must remember that the heavy rainfall in England is itself a fertilizer and gives a heavy growth of grain. We must also remember that Indian corn, so valuable to us in bringing up the fertility of the soil, was unknown in England till the settlement of America, and that it will not ripen there and is not profitable to raise, so that probably the old English system of the rotation of crops was about as good as could be managed before the days of machinery and silos.

II. But this system of rotation of crops was connected with a very peculiar division of the land. All the tenants on any particular manor lived in a hamlet or village about the center of the manor. Here also dwelt any cottagers who had no land, and were therefore day laborers. The manor was divided into three fields lying on different sides of the village, or sometimes into six fields, where the lay of the land made it better. In the latter case a pair of fields was treated like a single field. Each field, or pair of fields, followed the rotation of crops just described, so that one field or pair of fields would lie fallow, while one would be in a fall crop and one in a spring crop.

Each field was divided up into lots of an acre each separated from the other lots by a *balk* of green turf two or

three furrows wide. Each tenant had an equal number of these *acres* in each field. Thus if he had thirty acres, which was the usual number, he had ten acres in each field. But these ten acres were not side by side. Every acre was purposely scattered separate from every other acre, so that a man holding thirty acres would have no two of his acres next each other. But he would generally have the same neighbor to each of his pieces, showing that the land was originally divided up on some system, that tenant number one took his first acre in each field, tenant number two next to him and so on till each had an acre, then they each took another acre apiece and so on till they had each got his thirty acres, ten in each field.

These acre lots were always, if the lay of the land allowed it, just four rods wide and forty rods long. They were measured off with an actual rod or pole, sixteen and one-half feet long. The forty rods in length was called a *furlong*, that is a *furrow-long*, because that was the actual length of nine-tenths of all the furrows made in England, the only variation being where the lay of the land would not allow it. One rod wide and one furrow long was called a *rood*, and four roods made an acre, or a *ploughing*, for an acre was considered a day's work to plough in the way they did it.

In ploughing there had to be a place to turn around at each end. So for every ten of these acres there was a *head-land* at each end to turn the plough on. These strips were thus of course forty rods long, and were made four rods wide, so as to be acres like the rest, only they had to be ploughed after the other acres were ploughed. Moreover, as these acres were not laid off with the compass like our land in Wisconsin, but were placed according to the lay of the land, there were some *gores* or remnants of land that had to be ploughed the best way they could be. In many cases this was managed by leaving irregular shaped patches of land for a village common to be used for play ground and pasture.

But the great trouble was with the side hills. They could not be laid out in regular acre lots. The old English managed that by laying them out in *lincs* or narrow strips run-

ning along the side hill on a level. These strips were always ploughed toward the down hill side, so that each strip made a terrace, with its balk of turf on the outside. These are to be seen in many places in England now.

Thirty acres, ten in each field, was the usual holding, but some tenants had fifteen, five in each field, and some sixty, twenty in each field, and occasionally a wealthy tenant could be found with a *hide* of land or one hundred and twenty acres. Such a farmer could plough his own land without help, except a hired man.

“For he that by the plough would thrive,
Himself must either hold or drive.”

But the smaller farmers had to club together to do their ploughing. There was supposed to be a yoke of oxen for every thirty acres. It took eight oxen to a plough, four abreast, therefore four ordinary farmers, each having thirty acres and a yoke of oxen, would be obliged to club together to plough their land. The customs of each manor prescribed how this was to be done, so that there was no difficulty in organizing the plough teams. The farmers of Wisconsin would be astonished to see eight oxen drawing one plough on ordinary land, but it must be remembered that English soil is mostly stiff clay, and that the old ploughs used before the days of modern improvements were very clumsy things. With such a team, too, any farmer can see that it would take quite a headland to turn around on. One curious thing about these eight-ox teams was that the driver generally walked behind, leading the four foremost oxen by ropes. One ox out of each four always walked upon the ploughed land, one in the furrow, and two on the stubble land.

IV. The title of the tenants to their holdings is closely connected with the beginning and the end of this system. How it began is a matter of dispute among antiquaries. Some claim that at first the land owned in common by a village, was divided up among the various families, and redivided by vote of the village as fast as the families changed by death, or by marriage, or by the admission of new fami-

lies to the village community, just as is done to-day by the village communities all over Russia. Under this system no individual owns any land, but the village gives its members the right to use, taking their several shares of the land subject to a redistribution of the land as often as may be necessary. Others claim that the lord of the manor acquired the land by conquest or by gift from the king in return for military services, and divided up the land among his followers or his serfs as the case might be, making them tenants. Arguments are drawn for one side or the other from the similar division of land in other parts of Europe. It is agreed that there were two systems, the "one field" system, and the "three field" system, that the former prevailed in Wales and Ireland, and the latter in England, and that the "three field" system, with its rotation of crops was an improvement on the "one field" system with no rotation. Both systems had the plan of dividing each field up into little lots, and there is a fair argument for making either system the result of a primitive democracy or of a primitive aristocracy. The whole subject is a new one to historians, who never until lately troubled themselves about the condition of the common people and being new, it has not been fully investigated yet.

At any rate, when the Normans conquered England, we find the feudal tenure of land fully established, both the knight's tenure and the villein's tenure. The Norman conquest only substituted French lords for English lords, but the tenants remained the same. Each class of tenants, the socmen, the villeins, the cottagers and the serfs, had their well understood duties to perform to the lord of the manor. Most of these tenants were villeins, the knightly scorn of whose manual labor is shown in our use of the word villain. They had to pay their lord as follows.

1. They must work for him so many days a week, generally three days.
2. They must also work extra days, if he called for it, within certain limits.
3. They must also make certain payments in money and

in produce, such as a pig, a chicken, a dozen eggs, a penny at Easter, etc.

The socmen paid less, the serfs more, than the villeins, who formed the bulk of the tenants.

At the death of a villein tenant, his holdings were not divided but descended to his eldest son, the other sons generally becoming cottagers or day laborers.

In the fourteenth century their services were generally commuted for money rent, and the villeins thus became tenant farmers. But their tenancy was very different from that of a tenant in Wisconsin. He is a tenant at will, and has no title to the land, but those tenants had a title to their little holdings as well recognized as their lords had. A tenant could not be turned out of his land except for a very serious cause, similar to that for which a knight or baron would forfeit his landed estate as well as his life. Besides these lands held in this way, and intermixed with them, the lords of the manors also had lands which they cultivated themselves. In the early days the tenants' service for the lords was relied on to till these *demense* lands. Later when their services were commuted for a money payment, the money was used to hire farm laborers. These demense lands were cultivated in acre strips on the three field system right along with the tenant lands, subject to the same rotation of crops. The laborers lived in cottages in the same villages with the tenants, each with a little garden patch, and generally with the right of pasturing two cows and a calf on the common fields.

The advantages of this system, strange as it seems to us, were really very great, or it could not have lasted more than a thousand years.

It brought the people together in little villages, with all the social and business advantages that gives. We all know that this is the great defect of our system of farming in America, the isolation of farmers.

It compelled a rotation of crops and deep ploughing, not leaving it to the whim of each farmer. All the land had to be tilled in about such a way.

It avoided the use of fences or hedges to a great extent,

and compelled a system of herding cattle in the care of a village herdsman.

It encouraged the raising of cattle and sheep and the fertilization of the soil by them. One-third of the plough land was always fallow, and therefore pasture. The other two-thirds were also pasture after the grain was taken off. The commons were also pasturage, so that there was pasturage enough in that temperate, rainy climate for a full supply of cattle and sheep. Sheep were largely raised, and wool was one of the great exports of England, down to recent times, when the English began to manufacture woollen cloth themselves.

A great advantage of this system of farming was that it produced and protected a class of hardy and well-nourished yeomen, the strength and support of their country. With a similar yeomanry Rome conquered the world, and perished because captives taken in war and reduced to slavery took the place of the free farmers. By such a class of farmers the Union was preserved from the attack of the southern slaveholders. By this well-fed yeomanry, practiced in the use of the bow, England, time and again, overthrew the chivalry of France. For lack of such a yeomanry to-day England stands wealthy but almost powerless against a foreign foe or the threatening domestic revolution.

Thirty acres of land, with a house and garden spot, and the right of pasturage and woodland and meadow, on a fertile soil, kept in a good state of cultivation, made a good farm. It must be remembered, too, that nearly everything that such a farmer used was raised on his land or made in his house, even to his beer and his boots. The condition of the serfs and villeins in Anglo-Saxon times and during the first two centuries of Norman rule, was greatly better than that of the slaves in the Roman empire or in Europe in the early middle ages. Villeinage was a great improvement on slavery, tenancy was a great improvement on villeinage.

The end of this system was brought about by the same cause that is depopulating Ireland and Scotland to-day, the greed of the landlords. The great Revolution of 1688, which

after a generation of contest in war and in peace settled that the King should not govern England, placed that power in the hands of the landed aristocracy. They favored themselves in every way, and especially by a series of enclosure acts. These acts were private acts, generally one for each manor affected by it, and were gradually passed. A few manors have not yet been enclosed; a few were enclosed before the period recorded, but the greater share of them were passed during the last century and the first half of this century. These enclosure acts compelled the land to be rearranged so as to bring each man's acres all in one tract. That was always the excuse given for the act in the preamble, and in the changed condition of agriculture it probably was a good thing to do. But the enclosure acts all authorized the landlord to enclose and use for himself the commons, which were held by the villeins for pasturage, for meadow, and for playgrounds. This was simply robbery under color of law. In connection with this every means was used to "freeze out" the tenants, which could be done as the courts were in the landlords' hands, so that the result was to enrich the landlords, to reduce the tenants mostly to laborers or drive them to America and to create a class of tenant farmers needing a capital greater to carry on their rented farms than our Wisconsin farmers have including the total value of their lands. In view of a similar process in Ireland Goldsmith said a century ago:

Ill fares the land, to hastening ills the prey,
Where wealth accumulates and men decay.

The peasantry of England in 1400 were the best off of any peasantry in Europe; in 1800 they were the worst off. The inevitable retribution was delayed a century by the wonderful growth of manufactures, caused by the great inventions of the nineteenth century, making a home market for English farm produce. But the retribution has now come, and English landlords and their allies, the tenant farmers, are now practically bankrupt.

England, for many centuries, conducted its agriculture so as to make men as well as money, and was a great nation.

England now conducts its agriculture so as to make money at the expense of manhood, and after from one to two centuries of this sort of aristocracy, after driving the best of her sons over seas to found a greater England this side of the Atlantic, after crushing Ireland like a squeezed orange, after sending half her laboring population to the poorhouse in their old age, and all in the attempt to make money for the ruling aristocracy, that aristocracy finds itself almost bankrupt in pocket, and soon to be bankrupt in political influence.

Out of this situation another system of agriculture is certain to arise, and I believe it will be the American system of small farms tilled by their owners. But in all the outcry at the present time against the landlord system, let us not confound it, as so many do, with feudalism. The feudal system of agriculture in England I have described. It is a queer thing to our eyes, but it was a great improvement on the serfdom that preceded it, on the slavery that preceded that, and on the landlord system that has succeeded it.

HONEY.

BY J. W. VANCE, M. D., MADISON, WIS.

The subject of honey ought to be of interest to the agriculturist, knowing as he does that every flower almost that blooms on his farm, and along the roadside, yields its delicious nectar to the busy bee that, with tireless wing, flits from flower to flower in quest of its food, reminding us of the familiar lines of the old poet:

How doth the little busy bee improve each shining hour,
Gathering honey all the day from every opening flower.

From every meadow, orchard and forest the summer zephyrs bear upon their wings countless tons of this precious product that ought to be gathered for the good of man.

I do not come before you to discourse upon any of the improved methods of bee-keeping. It is not of the importance of a more scientific bee-culture, or its progress, that I wish to descant, but rather to say something about this great

natural saccharine product known as honey. I wish to speak of its constituents, and its adaptation to the needs of the human system, and its superiority as a sweet to all other saccharine substances in common use.

Although honey has a very ancient history, sacred and profane, being in use from time immemorial, its praises sung by inspired poets, used as an ordinary article of food by persons in every station in life, found upon the table of the peasant as well as upon the table of the king.

Owing to the progress of chemical science in these latter days other saccharine products have come forward to compete with Nature's sweet and has to a very great extent supplanted it. We now have cane and grape sugars and syrups made from them, consequently the use of honey has become almost a lost art.

It seems to be regarded by most as a luxury only, and seldom appears on the table except on great occasions. Our ancestors had it always on the table and used it as an ordinary article of food.

Honey is a physiological sweet; in other words its constituents are such that it is absorbed into the blood without undergoing chemical change. Such, however, is not the fact with regard to sugar. Sugar is indigestible, or rather is not susceptible of absorption and assimilation as honey is, but it requires the action of the gastric juice to change and rearrange its elements. The action is described in chemistry in this way: The elements are so acted upon as to split or invert them, the muriatic acid being the chief chemical agent. This change produces what is termed in chemistry dextrose and laevulose, the former a starch element, the latter a fruit element. The names are derived from the way they are affected by polarized light. After this change occurs they are absorbed. If, however, this action is hindered in any way, for instance, if the amount of sugar taken into the stomach is in excess of its capacity to digest, or in other words, to transform, the residue undergoes decomposition into elements that irritate and inflame the mucus membrane of the intestinal canal, producing a train of ailments longer than I have now time to enumerate.

Think of the legion of little ones whose fondness for sweets is universal, who have suffered and died from gastric and intestinal troubles induced by excessive eating of sugar. Every graveyard and cemetery can attest the truth of this assertion.

The importance of sugar as an element of nutrition may be inferred from the large proportion of the elements of our food which is transformed by the action of the digestive organs into the constituents of sugar. Consider for a moment the amount of bread, potatoes and vegetables we consume daily, all these undergo this saccharine change before they are prepared to be absorbed and assimilated by the system, it may give us an approximate idea of the quantity of these elements required to nourish and sustain our bodies. If, therefore, the saccharine comprises so large a part of the elements of our food, is it not an important question for the people to consider as to what form of sweet is the most appropriate and digestible and healthful, and the least liable to injure the system or weaken the functions of digestion? It seems obvious to me that honey being so perfectly adapted for absorption and assimilation and less liable to fermentation is the most healthful and nutritious and should be preferred to any other form of sweet.

The formic acid contained in honey tends to preserve it from decomposition even when the stomach is enfebled and slow in performing its functions. Beside the saccharine property of honey it also possesses a most delicious aroma and taste that give it a charm for exceeding anything that is imparted by artificial flavoring to ordinary sugar. Besides these points of superiority I might mention the fact that is perhaps known to many of my hearers, the medicinal virtues possessed by honey, and its adaptation to the treatment of many forms of disease, especially those of an inflammatory character, among which I take the liberty of mentioning catarrhal inflammation of the eye, especially of the eye-lids with agglutination (or sticking together) of the lids, applied as a salve. Sore throat, especially ulcerative, used as a gargle. Indolent ulcers, saltrheum, Chronic coughs and Bronchitis.

I will not consume time to set forth at greater length the virtues of honey as a sweet or as a medicine. It has been my object to give only a few hints upon the subject. If these should have even a very slight influence in bringing honey into a more general use and in that way benefit my fellow man I shall be glad and esteem myself well repaid for this feeble effort.

FRIDAY, FEBRUARY 10, 1888, 9 o'clock A. M.

Mr. Phillips—Mr. Chairman, I did not get through with what I had to say last night. I have a few figures here I want to give you. I selected these figures from my own town in the last year. Ten good grade Short-horn steers a year old in the spring were sold the next January for \$408. On a farm within three miles of that, just as good land a man sold ten common steers, from a very poor sire, and he spent about as much time with them, for \$150, which made \$258 difference, and if you follow that up for five years it makes \$1,290. There is a transaction which occurred in our town.

I take two cows that stand side by side in my stable—I don't think there is much difference in my cows—and I weigh the milk of those cows and one gives twenty-nine pounds and the other fourteen, and they get the same grain ration, only one perhaps eats a little more than the other. Taking twenty-two pounds of milk for a pound of butter you will find that it makes a difference of \$190 on those cows in five years.

A Member—Both the same breed of cattle?

Mr. Phillips—No, sir, one is a common cow, but Roner said she was graded Jersey, half Holstein and half Jersey.

Mr. Everson—Did they both come in at the same time?

Mr. Phillips—About a month apart, one in August and the other in September.

Mr. Everson—Do you know what difference there is in the weight of the cattle?

Mr. Phillips—Yes, sir, there is about three hundred pounds weight in favor of the best cow.

Now I have followed up the difference in two mares. One man bred his mare to a thoroughbred horse, paying twenty dollars for the horse, and he sold ten colts for \$850. His neighbor bred to a five, six or seven dollar horse a common mare, and his produce in ten years brought him \$640. You see, gentlemen, when you come to make figures they are startling.

FARM BUILDINGS.

BY B. S. HOXIE, EVANSVILLE, WIS.

Mr. President, Ladies and Gentlemen: In these times of farmers' conventions and farmers' institutes, there is a great deal of talk about better breeds, and better feed; better care of farm stock all along the line of animal husbandry. But there is very little said about better or more convenient barns and stables. Now while my name appears on the programme for a talk on Farm Buildings with plans, your President says, "make it short," so I shall be obliged to confine myself to the barn, and this I shall do from a builders' stand-point as well as from the farmer's convenience. This plan which I present is not wholly an ideal barn, but one which embodies the main points as I find them by experience to cover the wants of a large class of farmers all over our state.

Of course I see a great difficulty in presenting one plan to suit all farmers, consequently I have made no attempt to do so.

If a man makes dairying his exclusive business he must have more stable room for his cows than I have given here. Then again if he is breeding horses mainly, he must have a different arrangement for that purpose. So from the stand-point of a large feeder; an extensive breeder, or a dairymen who keeps a hundred cows, this plan will come short in his requirements. I here give the size of ground plan as 40x68 feet with carriage and tool house attached as you see in plan and elevation 22x36. You will notice that although I have shown an elevated, or raised drive way to reach the main

floor it is just as well adapted to a basement, or a side-hill barn without deranging a single feature of the plan, except it may be the shortening of the basement windows on the front or bank side. Indeed, I would prefer to have some natural slope on this side of the barn, then I should be sure of perfect drainage.

I think some farmers make a mistake in planning a barn when they allow so much space for driveway floors. In the old fashioned way of unloading hay by hand this was necessary, but now many think it just as convenient to elevate it at one end on the outside, and lately I have seen some large stock barns with no driveway at all for taking in a load of hay. I think as much can be gained to the farmer by having his barns conveniently arranged to take care of his cattle and horses in the time it takes to do his chores, as it is to save time in accomplishing any other job on the farm, so I would have hay and grain, straw, and feed of all kinds, just as near to the place of use or consumption as it is possible to get it. And for the same reason I would put my carriage house adjoining the stable door, and the harness room just as convenient. I would have all the rooms in the barn well lighted, for I never could see any sense or reason in having a dark barn. The old fashioned barn generally had cracks enough to let in both air and light, but I hope we have now no use for such.

As no farmer's barn would be complete now without a silo in it, or adjoining, I have planned this as you see for two silo pits, which open into one of the feed alleys on the first floor, as well as by a chute or trap door above when the pit is full. You will also notice chutes from every mow and bay, for either straw or hay, communicating to the stable floor below. And these should be so constructed that hay or straw can be pushed down from one side without any lifting to get it into the chute.

You will also notice I have made a narrow stairway on one side of the main floor leading onto the floor over the feed and grain bins, and from this I would make a similar flight of stairs extending into the loft, or at any stage of the hay mow. On one side of this stair have a hand rail of

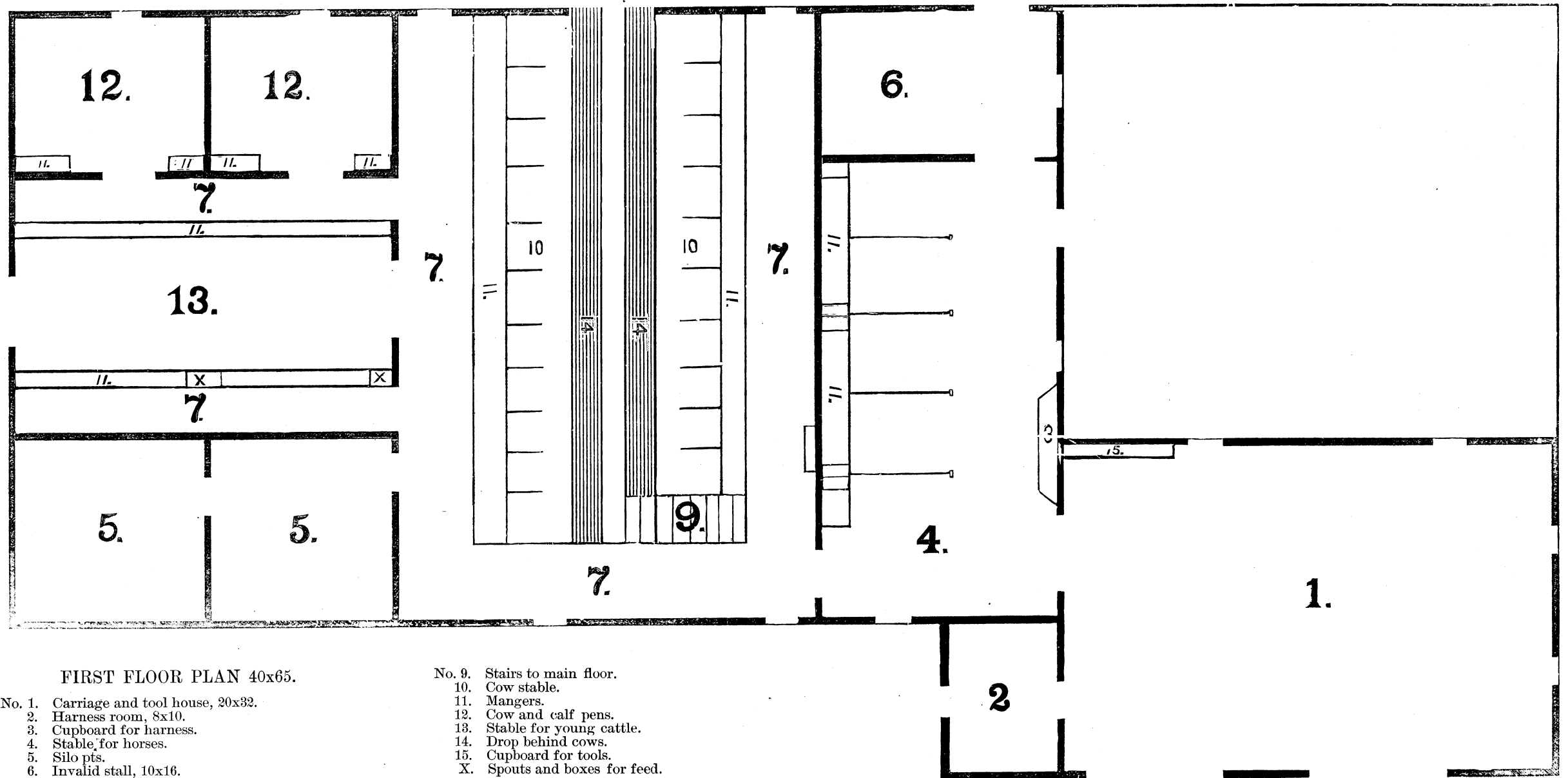
2x4 stuff, so there will be some support in going up or down, without the danger or inconvenience of climbing a perpendicular ladder. These stairways can be quite steep, and string pieces of 2x4 jained in for steps of 1x6 inch stuff, and two feet wide, or two feet for length of step is sufficient for all purposes.

Since there has been such a great improvement in barn door rollers I would hang all outside doors with anti-friction rollers. And all stable doors should be constructed with an inner or slat door for the purpose of ventilation in warm weather. Here you will see the utility of having slide doors, for a hinged or swing door can never be left part way open with any degree of safety or satisfaction. I would make all basement windows so that the upper casement could either be let down its full length or tipped over inward and fastened at any point you choose to afford ventilation. And a humane man now days will put wire screens into his stable windows. As I promised to talk from a builder's standpoint let me say that improved methods have been adopted in building barns as well as houses; and when I say build your barn without any heavy sills, beams, posts or plates, and without framing of mortice, tennon or a hundred or more short braces, then the old barn builder will begin to criticise. We discarded all of this years ago in house building, and now we are going to do it in barn building.

In the first place lay up your foundation wall just high enough from the ground to keep the dirt and outside drainage from coming in contact with the wood work of the building. Then put on your sills which are of two thicknesses of 2x8 sound plank well bedded in lime mortar, and spiked together, and well spiked at the angles and all crossings. Now take 2x6 studding of whatever length you choose to have the height of first or basement story; which should be about nine feet. If you have half basement wall on one side of course the studs on that side will be so much shorter. It will do to place your studding two feet from centers. Then commence raising as you would a balloon frame for a house. Toe nail your studs with good steel wire nails; double at corners, doors and window openings. Now

put on your plate, or belt as I call it, of two thicknesses of 2x8 well spiked to tops of studs. You are now ready to put on your main floor joists, which should be of 2x10 placed one foot from the centers; and with this plan presented no one length will be over 16 feet, and will rest on girders 2x8 or 2x10 two thicknesses, supported with posts where partitions, managers, or stalls will come, so as not to be in the way. Joists should lap by so as to securely nail, or if they abut at ends they can be made secure by nailing short pieces of boards on the sides over the joints. These joists are all toe nailed to the belt or plate, and every other one is in the right position to be spiked, also to the studding of the main building proper. (Around the space occupied for the silo I would use 2x8 studding and place 16 inches from centers.) You are now ready for enclosing the first story, and on the outside of the studding I would use good sound common boards well nailed with 10 penny nails. On this put one thickness of tarred paper, then cover with drop siding. I double board in this way to make tight walls and no spaces between studding to catch dust and chaff, or a hiding place for vermin, as it would do if it were ceiled up on the inside.

You are now ready for your studding above which you can have sixteen, eighteen or twenty feet, or any length you choose for the height of the building, and cut them all off the same length — ends and sides the same. Put on plates of two thicknesses, as I have already indicated, around the building. But to give it additional strength on the ends you may use 2x10 plank if you choose. The studding on the ends of building will be all lengths, in proportion to whatever pitch you give the roof. Center posts inside can be of two thicknesses of 2x6 or 2x8 to support all girders or cross ties. Purline plates are to be made in the same way, and these I would support with long braces of 1x6 nailed on to each side. A 2x8 piece of timber well spiked will hold a greater lateral strain than an old fashioned girt with one or pin holes in the tennon. I know some may say this is not strong enough for a barn, but think it over and then go into some of your old barns boarded up and down with girts

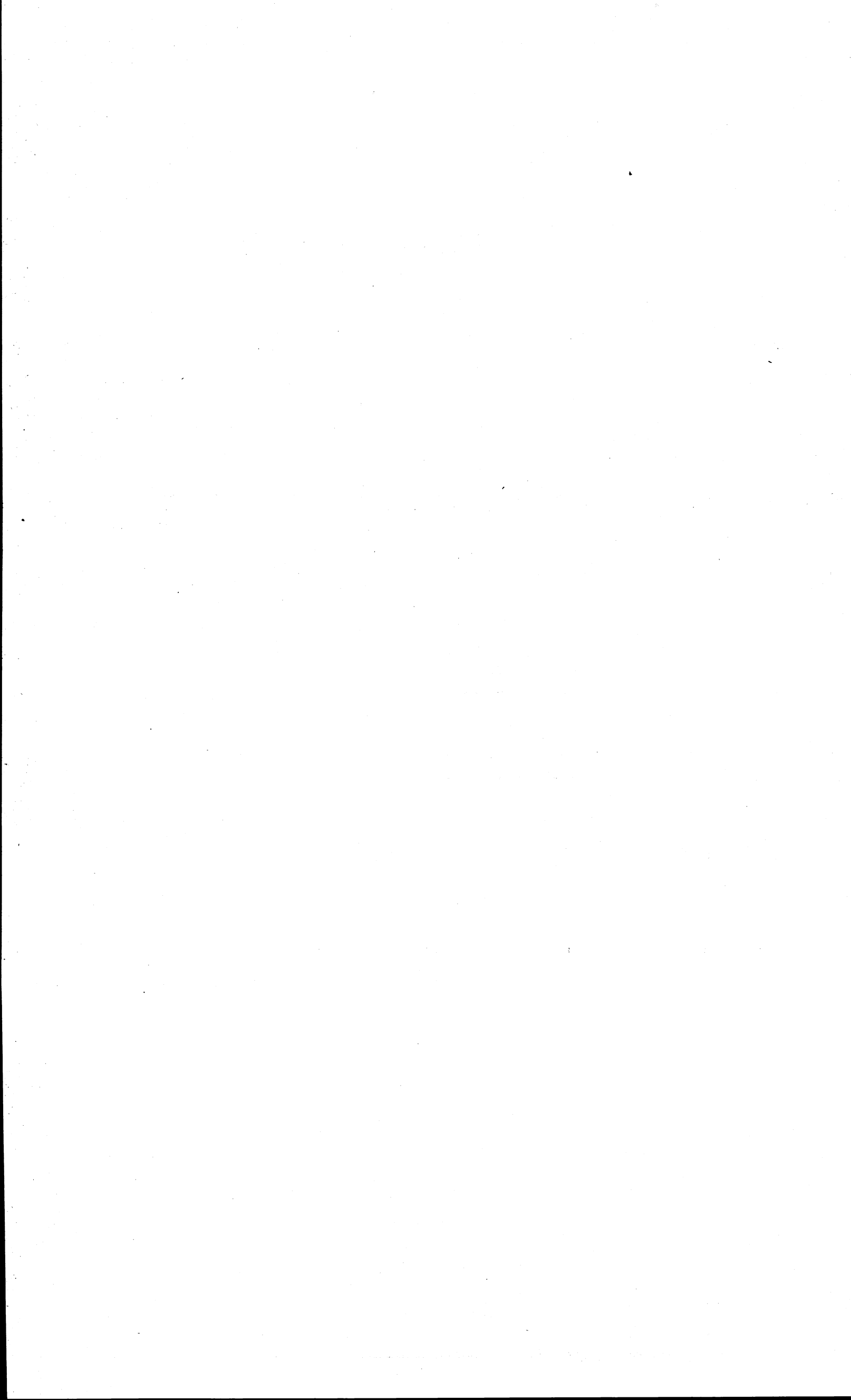


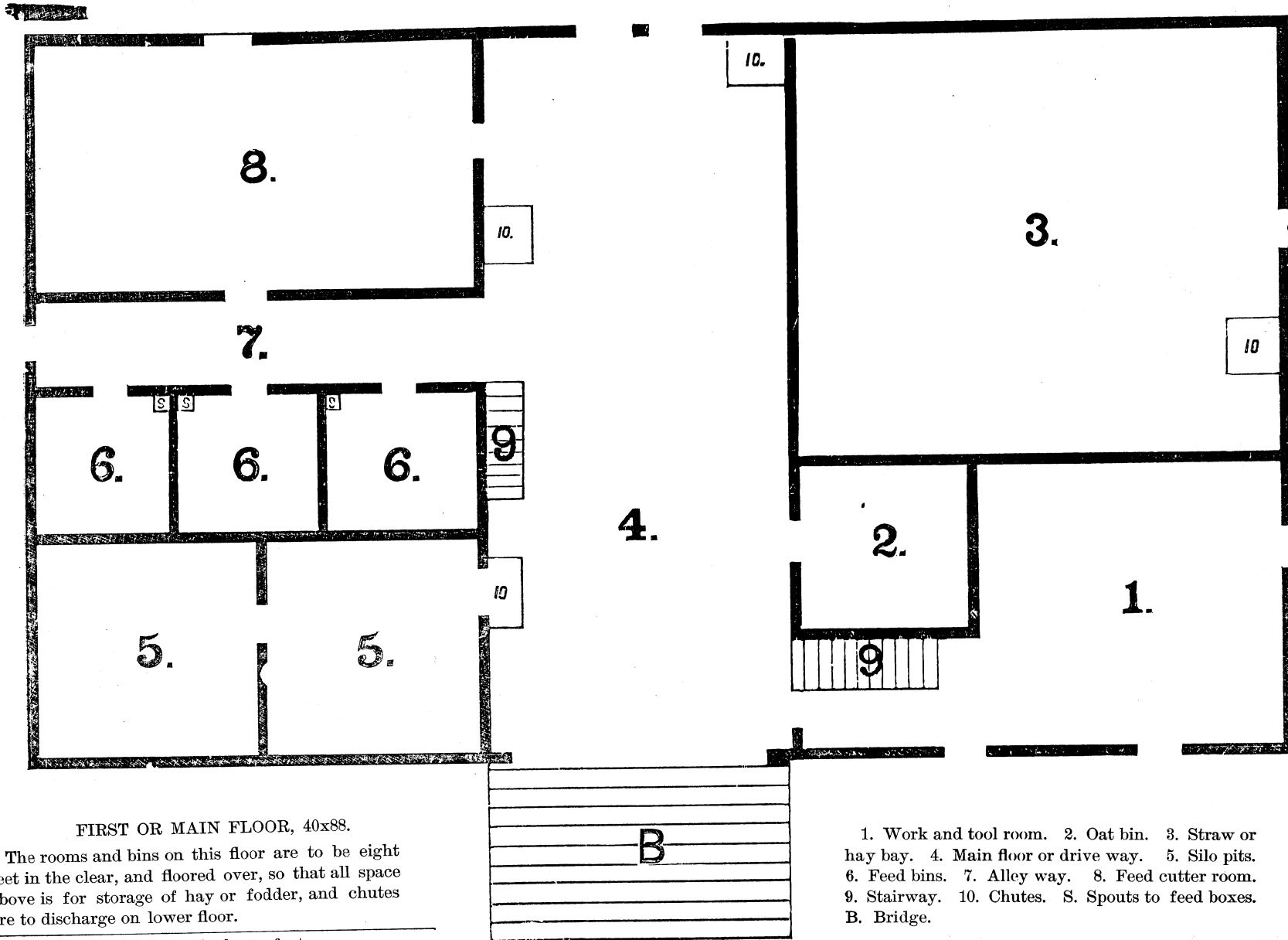
FIRST FLOOR PLAN 40x65.

- No. 1. Carriage and tool house, 20x32.
- 2. Harness room, 8x10.
- 3. Cupboard for harness.
- 4. Stable for horses.
- 5. Silo pts.
- 6. Invalid stall, 10x16.
- 7. Alley ways and feed walks.

- No. 9. Stairs to main floor.
- 10. Cow stable.
- 11. Mangers.
- 12. Cow and calf pens.
- 13. Stable for young cattle.
- 14. Drop behind cows.
- 15. Cupboard for tools.
- X. Spouts and boxes for feed.

SCALE — $\frac{1}{4}$ inch one foot.







four feet apart and short braces, and see how many you can find loose.

Perhaps the arrangement of this barn will not suit all of you; it would be a wonder if it did, but I am safe on the mode of construction, whatever you may say of the plan, for, as I stated in the outset or beginning of this talk, one plan will not suit all.

Now I will tell you how to make the stable floors, and with the aid of letters and figures for reference you will see the plan as I do, perhaps. So if you do not want to arrange yours just like it, you may find some help in the diagram.

Wherever it is necessary for any center posts for supports I would lay up good stone or brick piers to receive all such supports independent of floors, so that if any floor or partition, needed after repairs, it would not disturb the support.

Now fill in the entire floor space nearly up to under side of sills and tramp or well pack it down, then where the drop is to come behind the cows, put in short pieces of 2x4 stuff well bedded in lime mortar or grout. Fill up the space with grout, then spike on the plank which are to form the floor of the drop, this should be at least 18 inches wide, spike to each edge of this 2x4 scantling, which will leave four inches space. Now fill all the floor spaces up level with this, only bedding in 2x4 stuff with lime mortar or grout where it is necessary for supports to the floor.

The drops should have a descent of a few inches only, in the length of the barn, just sufficient so that drainage or flushings when needed, will take it towards the door. The floor under the cows will be of course transverse to this and spiked to the upper edge of the 2x4 mentioned, will make a drop of four inches, which is in my opinion amply sufficient. The floor for cows to stand on should incline not more than one inch in the length of it, and from four feet to four feet six inches is long enough. As there are so many ways to make a manger, and so many kinds of stanchions, I shall venture no opinion, only use the best you can find for ease, comfort and security.

I would fill in the floor space as I have indicated for two reasons. It prevents any space for the lodgement of dust or

vermin, and it is so tight that no loss can be occasioned by the waste of the liquid part of the manure. And furthermore, timber and lumber will last longer bedded in lime mortar than in any other way, unless it be kept perfectly dry, which cannot be in stable floors.

I have arranged this plan so as to have the head of cattle face in opposite directions for I find that the majority of farmers prefer it this way as it brings all the droppings more convenient to be taken out to the yard or field. And for this purpose I have made the door wide enough to run in a sled or cart for that purpose. I would make some arrangement so that all stock could be watered in the stables on cold or stormy days. All pens should be constructed with swing gates or sliding partitions so when necessary they may be easily divided, and all grain and feed bins should be constructed with spouts to discharge into a box below for convenience in feeding.

Construct the carriage house so there shall be no posts in the entire area to prevent running in or turning a wagon or implement of any kind with the utmost freedom, for you will find that a great convenience.

I have spoken of stanchions for cows, but I do not recommend the practice of confining cows in that way, I would prefer each stall wide enough for two cows which would be about seven feet, and then tie each to one side with strap or rope around the neck, snapped or fastened into a movable ring sliding up and down in a long staple. There are various other methods now used and all giving more comfort to the cow than the common stanchion.

I am aware that this method of constructing barns is a departure from the old plan, and of course I expect to be questioned and criticised, and that is what I am here for. I will say, however, that this method is cheaper in lumber and labor, and besides a stronger building.

DISCUSSION.

Mr. Clark, of Galesville — How are you going to fill that barn with hay, or such other fodder as you have, as you haven't a floor or anything else to drive in on? Can you fill it from the door, or how?

Mr. Hoxie — A great many farmers think they do not care anything about the old driveway. Every farmer now fills his barn with a hay fork, and some say they prefer to drive to the end of the barn and fill it that way.

A Member — How wide is your feed alley?

Mr. Hoxie — Four feet wide; some say three feet is wide enough. Of course you understand I do not offer this to meet the views of every farmer.

Mr. Wilcox, of Mauston — How strong should the center partitions be between the pits in the silo?

Mr. Hoxie — A very slight partition would answer there because in filling the silo you would fill half one day and the other half the next day, perhaps.

Mr. Everson — How deep is your silo?

Mr. Hoxie — The inside measurement of these pits is 11x12 feet. If I was going to build a silo out doors, I would have these pits sixteen feet square; that is plenty large enough. If you build it outside, having no room in the barn to put in a silo, to begin with make your silo 16x32 feet, which gives you two pits, and about 16 feet high. That is about the right height.

Mr. F. Bemis — How do you brace your barn about the upper floor?

Mr. Hoxie — That is a very important question. I would not want any braces in, or not very many. Understand where the building is boarded around in this way, horizontally instead of vertically, it is a brace in itself. Any of you farmers that have an old-fashioned barn I venture to say, will find one-half the braces in your barn loose. I have seen a great many of them, and what strength or support can a loose brace be to a barn? If I was going to build a

barn for myself now I would use 2x6 stuff where it is necessary; that is heavy enough, and at the gable ends 2x4 is sufficient.

Mr. Everson — Do you think a barn built on your plan without posts, is as strong to resist storms and wind as one with 20x24 feet posts?

Mr. Hoxie — Yes; how much strength above the plan I suggest do you get in a timber frame? They generally use posts 8x8 and girths 4x6 and 6x8, and then you have only two inch tenons, and you have got two pins in that and all the strain comes on it.

In my plan I have the same strength that you have, and more, with that heavy timber, because the strength of anything is the strength of the weakest part, and that is in the tenon.

Mr. C. A. Cotta — I would like to ask if there is any economy in the octagon barns?

Mr. Hoxie — There might possibly be a little economy in space enclosing a large area, but it is doubtful. It is more difficult to construct such a barn. There are plans of very large barns built eight square, but I would not consider it economy to build that way.

Chairman Arnold — I believe I have a barn built very much on that plan. If I had to build it over again I would not build it. This is a very good plan, but, in my opinion, the best way to build a barn now is to build a long barn; take your hay in from the gable end, take it in with a horse fork, then have a driveway the whole length of the barn so that you can drive through the barn and take the manure out; in that way you can take it right to the field. This way is preferable for a farmer who wants to have cattle and horses and all kinds of stock and ensilage and everything of that kind in the same building, but for a stock barn for stock purposes I think all stockmen will agree with me that the best kind of a barn is to have it all above ground and take the hay in at the gable end.

Mr. Hoxie — If I were to build a barn for economy and to store hay or straw, I could give a plan very cheap; but if a

farmer wants his work where he can get at it easily, he wants it all under one roof.

A Member — What does it cost?

Mr. Hoxie — A barn could be built on this plan, with this arrangement and this size, at a cost all the way from twelve hundred to two thousand dollars.

Mr. Haaff — I do not want to antagonize any one, and I am not going to, but for a dozen years I have wintered from fifty to a hundred head of horses and four or five hundred head of cattle, but never until I got to running two hundred and fifty head of cattle together in a long and very wide side-hill shed did I ever get a reasonable appreciation of the enormous assembly of stinks that effervesce and go into thin air in a barn. I began to realize that it is an insult to the dignity of a horse to ask him to eat hay or anything that is put away in a mow above where there is a hundred head of cattle down in the basement. (Applause.)

I admire my friend here, and as he stood here I was thinking in my mind if only every one could present as intelligent an appearance — I am not giving him any taffy either — as this gentleman. My farm boys and people begged me to build a big barn. I began by answering this way: We do not know where we want it located. I will wait until we learn where we want the barn, then we will build it; and we have never changed from the old cheap way of having a big horse barn on one side, and a big cattle barn on the other, and I would build it right over again that way if we were to do it; and if for no other reason, for the manure question that the gentleman has mentioned.

You build on a pitch as steep as that (indicating angle of about sixty degrees) and your cattle will thank you for it. This plan of ours, you understand, had posts of eight feet, and then boards at the top, and then cross boards laid right on, and then battened with six-inch stuff; and then the sides are planed boards filled in with dry manure or dirt, or anything you have a mind to. You have a place perfectly warm. Now have you ever seen what has to go through your hay and feed in a barn over where you have two hundred and fifty cattle, and the same proportion of course where there

are fifty head? You go out in the morning with the temperature at zero, or twenty below, and look at the top of that shed. Inside your cattle are smooth and sleek and all right, and they come out in the spring just as they ought to but look at the seething collection on top which is steaming into that roof until people ask you what you have got in there. Now all that effluvia has got to go up in that barn and lodge, it lodges somewhere. It permeates every rafter, shingle, bolt, studding beam and every particle of the feed, oats or hay or corn, or whatever you have got which you feed, and you offer it to the horses and they do not do well on it, in my judgment.

I hope I am not treading on the toes of Mr. Hoxie. I feel kindly toward him because I am a farmer and I am interested in these things because they are economical things on the farm, and I am so much interested in this matter that I have spent considerable time and thought on this thing. I believe in having feed clean and good. You go into the house and there isn't anything that would make any one so mad as to be offered a meal with a dirty table cloth and everything not in shape. I treat my animals well because they are almost as good as I am, for you know we read that up yonder there are chariots of horses and chariots of fire.

Mr. Hoxie — I think, gentlemen, you will readily see the difference between a barn that you would keep two hundred and fifty head of cattle in and this one for seven or eight horses and twenty-five cows. There is quite a difference.

I neglected to speak of ventilation. In every upper casement of my windows you will see that I have the upper sash so I can drop it in this way, and the cold air would go to the upper part of the stable and make no draft below, and every member who has had experience will bear me out in the assertion that you get the most manure value where it is drawn on the land in the winter. Not only the science of chemistry demonstrates this but the experience of the best farmers who draw it out in this way; and by having this tight floor you get rid of this effluvia where the stock is. I am just as much in favor of a better atmosphere for the animals as I am for a better atmosphere for man.

Mr. Allen — In feeding stock it is always important to have the barn so as to do it with as little labor as possible. It is labor we want to save as well as feed, and the increased facility with which you can clean out your stalls and barns is of great importance to the farmer. I would not build a barn unless I could have it so I could drive through that barn and clean out my stables. It is a very important consideration. My sheep barns are made in that way so that I can drive through nearly two hundred and fifty feet and clean them out. I do not clean them out usually until spring, but it is kept dry and the rubbish that is thrown out from the racks and the straw I sometimes scatter, and remains in there and the sheep lie upon it, and everything is absorbed by it, but when I get ready to clean it out I start at one end of my barn and go clear through and clean it all out, and if I was cleaning out my cow stables I would have them so I could drive through. You will save a vast amount of labor and trouble in that way, and it is a cleaner way of doing.

Mr. Broughton — There is an objection to Brother Haaff's plan, notwithstanding it is cheap and you do not have to clean out any stables or that sort of thing, and you can take care of your stock with a great deal less help, and so on; the objection is that it does not cost enough. How are these carpenters to get a living if you build in this way? that is what I want to know. (Laughter.)

ECONOMIC VS. GENERAL DESTRUCTION OF INSECTS.

BY F. A. CARR, MADISON, WIS.

Much has been said and written relative to the importance of economic entomology, and in a number of cases numerical calculations have been indulged in. To make the matter more plain I wish to call your attention to some of these estimates.

In the chapter on Lepidoptera, in his valuable report on the "Insects of Massachusetts Injurious to Vegetation,"

Dr. Harris assumes that there are one thousand species of butterflies and moths in that state. He says of them: "As each female usually lays from two hundred to five hundred eggs, one thousand different kinds of butterflies and moths, will produce, on an average, three hundred thousand caterpillars; if one-half of them when arrived at maturity, are females, they will give forty-five millions of caterpillars in the second, and six billion seven hundred and fifty millions in the third generation."

So much for the power of reproduction in this class of insects; but, as it is difficult, if not impossible, for the mind to grasp the significance of these immense numbers, we will try to find a more comprehensible form and to that end will consult Dr. Packard. In his "Guide to the Study of Insects," Dr. Packard says (speaking of the Polyphemous silk-worm): "When the silk-worm is fifty-six days old it is fully grown and has consumed not less than one hundred and twenty oak leaves, weighing three-fourths of a pound."

Now if one worm eats three-fourths of a pound, or twelve ounces, will it not be safe to place the average amount eaten by caterpillars, great and small, at one-twelfth that amount or one ounce? And if so, let us see what it means. We have learned from Dr. Harris that taking one pair of each species of butterflies and moths in Massachusetts, they would produce for the third generation — six billion seven hundred and fifty millions of caterpillars. If each of these eats one ounce of vegetable matter, this third generation will eat six billion seven hundred and fifty millions of ounces, or four hundred and twenty-one millions eight hundred and seventy-five thousand pounds of vegetable matter. Or to reduce it to a still more conceivable form, they would devour the amount (in pounds) of thirteen million one hundred and seventy-one thousand ninety-three and three-fourths bushels of oats, which, at thirty cents per bushel, would be worth nearly four million dollars.

Thus we see that the third generation from one thousand female butterflies and moths, of different species, can do damage to the amount of nearly four million dollars. If we had taken the third generation from one thousand

females of the Polyphemous moth, the result would have been twelve times greater. There can be no doubt that we have passed that generation of Polyphemous, which contained only one thousand females in years long gone by, and that the State of Wisconsin is suffering from a more numerous generation than the third of these, as well as of a thousand other species of butterflies and moths; and that if all that arrive at maturity during a single year were to confine themselves to a strictly "oat diet," oats are not raised in the state in sufficient quantity to satisfy their appetites.

Thus we see the importance of insects to the farmer and the necessity of understanding their habits in order that proper remedies may be applied.

The questions that remain to be settled are,—first, what insects shall we destroy as detrimental and what insects shall we protect as beneficial,—second, how can detrimental insects be best destroyed and what means can we use to cause beneficial insects to become more abundant.

I shall only try in this paper, to point out a mistake frequently made by members of the farming fraternity, and map out a general, economic classification of insects. The most common and noticeable mistake made by farmers, who appreciate the importance of entomology, is that of considering all insects injurious to vegetation as also injurious to them and their interests.

Two years ago, while visiting a friend who owned and operated a farm not many miles from Madison, I was surprised to see his boy armed with a butterfly net, eagerly pursuing a flock of large brown butterflies, at one end of his garden. My first thought was that the boy had been taken with the mania (to use the common expression), for collecting insects, and I asked his father if this was the case. He answered: "I read a short time ago, that the best way to check the ravages of the cabbage worm was to set a boy at work with a net, catching and killing the butterflies when they come to lay their eggs." "But," I said, "your boy is utterly disregarding the cabbage butterfly and wasting his energies on the large brown ones." "Well," said my

friend, "one is as bad as the other. The larger butterfly eats more than the small ones and therefore if he kills one of these it is equal to killing two of the small ones."

"But," I remarked again, "the large brown butterfly (*Danaïis archippus*) is not injurious, but wholly beneficial." For answer, he led me to the house, and taking down a book (which proved to be Harris' *Insects Injurious to Vegetation*), said, "This book describes only injurious insects."

He then turned to the description of *Danaïis archippus* with evident exultation. *Danaïis archippus*, the common brown butterfly, is injurious to vegetation but not to the farmer. Its larvæ feed, as I showed my friend in his own "Harris," upon the common milkweed (which I do not think is supposed to be very beneficial to the farmer), and therefore is beneficial inasmuch as it holds in check these noxious weeds. Pope says:

A little learning is a dangerous thing—
Drink deep, or taste not the Pierian spring.

My friend had passed lightly over the pages of his textbook learning only to distinguish the subjects therein treated by their names without bestowing sufficient thought upon either food-plant or habits, and when he thought himself thoroughly posted on all matters pertaining to entomology, he had only acquired an amount of knowledge that proved dangerous to his own interests.

To attempt to designate the particular insects that are beneficial or detrimental in a single paper would be folly, to say the least, and we shall therefore limit ourselves to presenting a scheme for the classification of insects, with regard to their economic qualities, which, instead of being intended to convey any specific information with regard to them, will act merely as a guide to those who care to study the subject under consideration.

To begin with, we shall classify insects under two general heads, beneficial and detrimental, and shall sub-class them as follows:

CLASS I—BENEFICIAL INSECTS.

Series I. Insects directly beneficial.

Sub-class I. Those that furnish some article for man's use — silk worms, etc.

Series II. Insects indirectly beneficial.

Sub-class I. Those that prey upon noxious insects — carnivorous and parasitic.

Sub-class II. Those vegetarians that feed upon noxious weeds.

Sub-class III. Those that feed on decaying animal and vegetable matter.

CLASS II—DETRIMENTAL INSECTS.

Series I. Directly detrimental.

Sub-class I. Those that injure or annoy man personally — fleas, bedbugs, etc.

Series II. Indirectly detrimental.

Sub-class I. Those that injure or annoy domestic animals.

Sub-class II. Those vegetarians that feed on plants beneficial to man (including those known as farm products).

Sub-class III. Those that prey upon beneficial insects.

That we may be able to oppose the ravages of these insects with some fair chance for success, every farmer should know the following things:

I. He should become familiar with all of the common insects, both beneficial and detrimental, that occur in his vicinity.

II. He should be able to discriminate between the beneficial and detrimental.

III. He should be able to distinguish individuals of the several orders, and refer each to its own order.

IV. He should become acquainted — personally or by correspondence — with the nearest specialist, to whom he should submit new or unknown insect pests for scientific study or identification.

V. While making good use of entomological text books, he should recognize, in the study, a progressive series not bounded by text books but of vital importance to himself, and he should endeavor by individual investigation and the study of current literature to keep pace with it.

While I may be accused of digressing, I feel that before closing I should say a few words with regard to the study of the natural sciences in our common schools. All over this country, east, west, north and south, we hear a voice of complaint from the tillers of the soil. Whichever way we turn, we hear new voices swelling the refrain, "Our boys are leaving us! they are dissatisfied with the old homestead and are going off to the city. How can we keep them on the farm?"

Let us first diagnose the case and then we can prescribe a remedy with more assurance of success. The human race is progressive. As we look down the darkening avenues of human history, we are struck with this fact and can see as the poet, who wrote —

And step by step, since time began,
We see the steady gain of man.

The farther back we go, the more evident is this progression; but, if we will but think for a moment we shall see that immense strides have been taken within the last century — yes, within the last fifty years. For instance the farmer of fifty years ago worked hard from four o'clock in the morning until nine o'clock at night, with breathing spells of, perhaps a half hour's duration, in which to *devour* his meals. When he went to town he took his corn and hogs, *bartered* them away for molasses, tea, flour, codfish, etc., and went home satisfied. His ambition was to "work to eat, and eat to work."

How is it with the farmer of to-day? He works reasonable hours, takes a reasonable amount of time in which to *eat* his meals, and when he goes to town, he sells his corn and hogs, purchases his coffee, sugar and other necessaries; and does this satisfy him? No, you will find in his coat pocket the receipt for a year's subscription to the *Western*

Farmer—or, perhaps, his local newspaper, with occasionally a book for the boys and girls at home.

Now let us see what effect this course produces on our population. We stimulate the mind to a desire for, and a determination to seek after, knowledge. This leads to the discovery that to work and eat are not the *only* aims to which a man can devote his life, but the means by which to obtain higher results. The education thus obtained at home, principally from the newspapers and occasional books, has developed the mind which now demands food for its present gratification, which when supplied entails further development and greater cravings for more extended mind-food. Here we arrive at the seat of the difficulty. The boy or girl is sent to the common school and goes to the "end of its rope," only to see the green fields opening up just beyond, and nothing in its curriculum furnishes food which will engage the ever developing powers of the brain, and, in so doing, give it no time for dissatisfaction.

Thus we think, the disease is easily understood. The principal symptom is restlessness—a longing for something different. Perhaps the sufferer may not have even a faint idea of what that something is but only cannot be satisfied. Now, what is the remedy? Is it to stop the paper and burn the books? The time when that would have had the desired effect is long passed, and we doubt if a farmer could be found in Wisconsin who would earnestly wish it back again. The proper remedy is to supplement the common school curriculum with some study or studies that will give the brain its longed for food and that can be advantageously prosecuted on the farm. Any natural science will fill the bill. The country pre-eminently abounds in number and variety of wild beasts, birds, insects and flowers, and there can these things best be studied.

The infinite variety—the wonderful life histories—the ever-changing and important economic relations of these myriad creatures,—will furnish material, for a life time, of earnest study and careful thought for the most fertile and powerful intellect, and still no apparent impression be made, so far as exhausting the subject is concerned.

The elements of these natural sciences should be understood and taught by the teachers of our common schools, and parents by furnishing text books and the current periodicals, on these subjects, should endeavor to stimulate, in the children, a taste for them, which if once created, would inevitably take such a hold upon them that it would be impossible to drive them away from a place where they find each day so many new things to interest them.

By giving special encouragement to the study of entomology the agency used to retain the boy on the farm would become a great power, in his hands, towards securing more profitable results for his farm labors. The destruction of that class of beetles known as "Lady-bugs," as pests would not occur so frequently as at the present time.

DISCUSSION.

Mr. Allen—This gentleman has given us a very able paper, but he has not pointed out to us any of the remedies we may use to overcome the difficulties we are met with in our farming. I suppose, sir, that the people of the state of Wisconsin and of all the Northwest have suffered more from depredations of chinch bug than from almost anything else we have to encounter; it is a question I have given some thought to and I think I can speak understandingly upon it, and although I am regarded as a crank I think I can refer to several in this room who will confirm somewhat the statements I shall make.

Some fourteen years ago we were overrun with chinch bugs. At that time I commenced the study of the chinch bug. That year after the wheat had got up so as to be three or four stalks spread out, the chinch bug began to make its appearance, and it seemed as though the whole crop of the country was going to be destroyed. The whole people were very greatly alarmed in regard to it. We had a grange in our town at that time and they assembled together, and some one told them that my wheat was not injured by the chinch bugs, and they assembled at the school house at our

place and consulted in reference to it and some came up to my wheat field to make an investigation in regard to it. I had sowed salt on my land and as the result of that investigation we sent off and bought fifteen car loads of salt, and that was the beginning of salt sowing in the state of Wisconsin. In regard to that I reasoned to myself like this: These insects lay eggs and I believe I can find them; so with a strong magnifying glass I started to look for them, and after spending two whole days with that glass I found what appeared to be a little piece of dirt or something, and I examined it very closely and I found it was eggs. It was about one tenth or one fifteenth as large as the potato bug's eggs you find on a potato sprout, and I found it right at the point of the kernel where the stalk comes out and over it within a quarter of an inch from where the sprout comes out. The instinct of the bug is to place its young where it can most easily get a living.

In order to understand this thing we must study the character and habits of this bug. It is a bug, it is not a beetle. Get that out of your mind. A beetle can dig in the ground; a bug cannot dig but it can crawl and work its way down in the interstices between the lumps of dirt until it gets down to the kernel of grain. I discovered still further another thing about it. There is a vast difference between a digger and a scratcher: a hen scratches and a woodchuck can dig. I found them provided with two little legs, and they would crawl up near to the kernel of grain and pick the dirt away from the kernel until they got right among its little roots, and there they would lay their eggs. I will tell you how you can find them. The egg is a purplish color and it will resemble very closely the ground in which it is laid, but in bringing your glass to bear very closely you will discover the egg. You want to take a strong glass and you will find it every time within a quarter of an inch from the place where that sprout comes out of the kernel.

Mr. Curtis—I do not think there is a farmer in the state but understands this part. Now what are you going to do about it?

Mr. Allen — I said they could not dig. The remedy is to cover your grain up at as uniform a depth as you can and over it draw a plank or stick so as to crush the lumps and fill up all the interstices between the lumps and then they cannot get down to get the kernel. They will always be on the top of the ground, near the surface of the ground. Some grain that will not be absolutely covered up once in a while will be affected. Besides that I always sow clover with my grain, and I do more than that, I sow plaster with my grain to make my clover catch and grow. Upon most of the prairie lands of the state plaster will not do much good but upon clay lands and sandy lands it will. I also do another thing; I sow salt upon the land. While I do not regard salt as absolutely poisonous to the bugs, it does in a great measure prevent them because it is taken up by the plant in its growth and as it is taken up I presume the salt is distasteful to them. These bugs do not come to the mating time until they fly. You will see them flying here and there, flying in all directions. That is the mating time, and after that the female lays her eggs, within ten days you will see them fly, and then you will see no bugs; they are all gone. It is the young bugs that do the injury.

A Member — Does that mating time take place early in the spring?

Mr. Allen — It takes place usually about the first of May, depending upon the earliness of the season. It will come after the grain has sprouted somewhat. The next characteristic of the bugs is that they are suckers and not chewers. They suck their food through a bill like a fly or mosquito. They penetrate with their little bills through the tender roots and suck the juice. The salt being thrown on the land it dissolves the silica, and that is taken up in the growth and that has a tendency to make the soil finer so there are fewer and smaller interstices left in the soil. Then the salt is distasteful to all insects.

After the wheat is ripe and the bugs can find no further sustenance in that ground the next point and the most inviting field is the corn field, consequently you will find them crawling from the wheat field to the corn field. The way

to get rid of them is to prevent their laying their eggs. After I have sown my ground and pulverized it thoroughly by drawing a plank over it and filled up the interstices between the lumps so there is no place for them to get down there, as I have said I have sown clover to shade the ground, and the salt has a tendency to keep the ground moist, and still further, it is distasteful to them. The most important thing is to commence in the spring; that is the time to head them off, and if you have not been successful in heading them off in the spring you will still have hope of success by taking a roller and rolling the land and throwing salt upon the ground. That will crush the lumps and shut off the air and suffocate them. A heavy rain too will suffocate them. You cannot drown them, but if you shut off the air from them that is the end of them.

Mr. Clark — What are you going to do such years as this last year when you cannot get clover to grow?

Mr. Allen — That is an unfortunate condition of things. Then I would pulverize the ground.

The Chairman — Would it do to roll the ground so hard they could not go down to the roots?

Mr. Allen — Yes, sir. Understand I recommend most strongly the pulverizing of the ground by the plank. It is worth more than the roller because it draws the ground and fills up the interstices more thoroughly than the roller,

Mr. Clark — We all know something, I think, of the chinch bugs. As far as salt is concerned I have heard this thing talked of before, and I took salt and sowed it on a piece of barley that I might know whether it did any good or not, and I found it made no difference. They flourish and grow fat and breed just the same where I use the salt as where I did not. I could not see any difference; and as far as clover is concerned we owe Mr. Allen a great deal, we all of us owe him a great deal for the introduction of red clover. He read it up and talked it up in this convention many years ago, and it is the cheapest fertilizer in this country; but in dry seasons like this and last what is the use of talking about shading any when you cannot get any shade to grow. Clover will never check them. If these

seasons had been wet we would have had no chinch bugs. That is why they come. This year I had oats and barley entirely destroyed, cut my oats for hay in order that they should not be destroyed the first time in my life, and I have been a farmer in this state for thirty-two or three years. This smoothing the ground is undoubtedly a good thing. We ought to fit the ground properly for every kind of grain every year. We do not want lumpy ground. We want to pulverize our ground the same as for a seed bed. We use the roller every year, usually, but that does not check the chinch bugs; I wish it did, it would be the easiest remedy.

Prof. Henry — I beg to submit a resolution: "Whereas, every year witnesses the destruction of human life in this state."

Mr. Arnold — Referred to the committee on resolutions.

Mr. Adams — The chairman reports very unanimously in favor of the resolution.

The Chairman — The question is on the report, which is in favor of the adoption of this resolution.

The resolution was unanimously adopted.

Mr. Haaff — I want to thank you personally. I will go home and burn up my diploma and hang this resolution up in its place. (Laughter).

The Chairman — We will call on Professor Henry for a few remarks on the question of ensilage.

Prof. Henry — We are experimenting with ensilage at the farm, and anything that I should say at this time would be in the nature of an advance report; and some experiences in this state have recently shown that an advance report is not always what it should be. Our dairymen got an advanced report a while ago and it stirred up a hornet's nest, and I might stir up one in what I said about ensilage at this time. I wish to say this, that I am in favor of the proper use of properly cured ensilage, and I believe the time is coming when our farmers will spend more thought upon the growth of fodder corn and upon the methods of curing.

We have learned wonderfully of late how to grow a corn crop. We have left the time of planting with a hoe and marking the field both ways, and the old argument whether

you should pat it two or three times or step on the hill, and if you step on the hill whether you dare bare on it with your whole weight, and what the effect would be on the crop. We have seen those things go by, seen the two-horse planter and the horse cultivator and the introduction of the harrow until the old ways have all gone; but just as soon as you get to where you are to cut you corn and dry it after you cut it you do not know anything more than your grandfathers. You will tear down a shock of corn after you have carefully put it up, pull the corn carefully from the stalk, find every nubbin, carry it to the crib and take off the silk and then feed it to the brindle cow that don't thank you a bit for the work you have done, for she could have done it as well herself (laughter), and the chances are the mice and rats have got part of it, and you have paid men for that work. Your grandfathers did that way and you are going in the same way.

Whether the silo is the way out of that thing I do not say positively, but it is in the direction of something new. It shows that men are struggling for better methods of getting corn into the ground, and for a more safe and certain way of getting that crop to the cattle. It is in the direction of progress, and I like it on that account. I do not believe the silo will make a shiftless farmer thrifty or a poor farmer rich. I do not believe it will bring about either of these things, but I believe in saving a portion of the feed on the farm in the condition that the silo saves it. It adds variety to the really narrow range of feeds in this country, for we have a narrow range. We do not feed turnips and other roots as a people. We do not like to grow them, and the silo adds another variety of feed and our dairy cows are very fond of it.

A farmer ought not to spend too much money to build an extensive silo to commence with. I would rather see him spend \$25 in fencing off a little bay in his barn, even if he has to tear it down later; for no man builds his first silo as he will later. You will hardly find a silo five years old but what the farmer wishes he had another chance to build.

A Member — That is so.

Prof. Henry — I knew one man who began with a silo in a horse stall, he tired of that and built a larger one; but he actually started his experiments in that. Other men have begun in hogsheads to see whether the stuff would keep or not. These experiments are too crude in these latter days. We have got by whether it will spoil or not, and the question whether the cattle will eat it or not; all these questions are settled; but we haven't got by the cheaper ways of handling it yet, and every year brings out a great deal new. Some of Mr. Beach's ideas were excellent and in many ways among the latest.

At the experimental station we have done nothing yet to show that ensilage is much superior to dry fodder to make butter from because we do not know whether the cattle have eaten more dry fodder or ensilage to produce the result. We have found a remarkable thing, that the fat churns out better from ensilage milk than from fodder milk. You take a can with a hundred pounds of milk in it from fodder, another can with a hundred pounds of milk in it from ensilage, both cans have fat enough, if you can get every bit out, to make four pounds of butter. It may be that the can with the ensilage milk in it will give three and a half pounds. You cannot churn all the fat out; no churn has yet been able to recover all the fat in the milk, and that goes up sometimes to thirty or forty per cent., but from our ensilage milk the fat comes out easily, and that is probably one of the explanations why butter-makers have talked for the silo and said they got a better yield. The chemist could not find more butter, but the butter came out better. The viscosity apparently changed with the feeding of ensilage. We have fed ensilage to steers with excellent results. I will not attempt to give you the results accurately. I will be only general in my statements:

Four of our steers, twelve hundred weight each, three years old, for a period of thirty-six days, when having a heavy grain ration, gained three and three-fourths pounds a day; four other steers standing beside them gained one and a half pounds per day upon ensilage fodder alone with no grain in it at all. When we started out with the silo,

after removing a thin layer of ensilage at the top we fed clear to the bottom and never wasted a pound; and in feeding those steers I think, unless something was knocked out of the feeding manger, I think there was not so much ensilage wasted as that basket full. (Pointing to basket on table.) There was not any wasted, only a piece might drop out of the manger and become soiled. Now when we can feed our corn fodder that close, that kind of feed is certainly fairly successful.

We are trying different kinds of corn and different degrees of ripeness. I would suggest as worthy of trial that the fodder should be pretty dry. Mr. Beach says go through and shock your corn, and then when your corn is cut and shocked, turn with the same men back and fill your silo, thereby enabling you to save expense and not make a regular threshing machine time of it as you will have to if you fill your silos with the fresh corn fodder. Our chemists tell us that you are putting in four hundred pounds of water in every ton you are hauling to the silo, more with this variety than with the other, showing that there is a great difference in the amount of water fodder holds. I think most of our varieties will become pretty near dry in the shock and then will go into the silo with less labor. You can load it better; it lies better; it handles easier; and if the silo is deep enough it will fill very nicely.

Mr. Clark — You filled one silo in the south part of the barn there; I think you said you told the boys to fill it and the wind blew it down; how is that?

Prof. Henry — We have not opened that big silo yet. Our ensilage has lasted longer than we expected. We are going to have more rough feed of that kind than we know what to do with if that silo is good. I got a letter from a man the other day who wanted to know if he dared feed it to his horses. He said he had more rough feed than he knew what to do with. He was feeding hay to his horses and he wanted to know about feeding ensilage. He had not calculated upon his fodder lasting so long, and would really have to carry ensilage over or feed it to his horses — rather a refreshing experience in these days of short feed.

Mr. Clark — Don't you feed your horses ensilage?

Prof. Henry — We haven't fed any amount. Farmers feed it somewhat, but I do not recommend it for horses.

Mr. Clark — I have a neighbor who is cutting dry fodder and feeding it to his horses.

Prof. Henry — That is different, but go slow or you will kill your horses with wet ensilage.

Mr. Adams — Did you ever meet a man who was not satisfied with a silo and with ensilage? Did you ever meet a man who put up ensilage in a silo and made a failure of it?

Prof. Henry — I have not met such a person in the state of Wisconsin. I have heard the complaint that it tainted the butter, but I have never met a person who had a silo who was not pleased with it.

Mr. Adams — Don't you think you are almost too conservative in your suggestion to these farmers, in view of that fact, that they should go slow? Now we have found in Wisconsin not less than two hundred good witnesses, men of good character and pretty good judgment, who have gone into this business and they have built these silos at a cost of about \$1.50 or a little less per ton to the building they have put that ensilage in. They have had much experience and they find as it goes out three tons of feed will feed a cow just as long as a ton of hay. Isn't it a pretty good thing to say to the farmers of the state that is something which you cannot afford not to do?

Prof. Henry — I would rather you would say that (laughter); I get my bread and butter from the state.

Mr. Haaff — Have you had any experience in cutting up corn and then taking out one tooth from the cylinder and one from the concave and threshed out the corn and fed the fodder in that shape?

Prof. Henry — They are doing that somewhat in this state.

Speaking of the silo, again I want to get through with that. Farmers, I am in favor of the silo, and I believe in your using it, but at the same time I do not want every one of you to hurry home and feel that you can get that mortgage off the farm by going to work and building a silo; but

because I am reasonable do not think it as of no importance. I do not think I have got to get as excited as a political speaker and endeavor to convince you that unless you join my party the country is going to the bow-wows. I do not need to talk that way in talking with you. I want you to have confidence enough in me when I make reasonable statements to put reasonable faith in them and act like business men. Now I am willing my friend Mr. Adams should make that statement.

Mr. Adams — Just as soon I would go to the dogs as not.

Prof. Henry — They cannot get at you the way they can at me. I can show you testimony from many men just as strong for cooking feed for hogs as any man gives for the silo, and I can give you by hundreds, men that know that it saves one-third of the feed; yet when the agricultural colleges of the country worked on that for years they could not show anything of that kind. Now the testimony upon that subject is sometimes off. The testimony is very strong in favor of the silo, and there will be thousands built next year.

The first thing to do is to have a good field of fodder corn to help your cattle through. Have that fodder corn any way, silo or no silo; that is the main thing; get that big crop of corn. You will have some left over after feeding your cattle in the summer when the drouth is cutting the grass short. You will have a lot of fodder left. If possible, put some of it into a silo. If you cannot do that, be glad that you have got the crop. It will carry you through the winter if you have to cut it and shock it and handle it as best you can; but better it seems to me is to have part of it cured; part go into a silo, But first of all get the fodder corn. The reason men have grown crazy on the silo is largely because this fodder corn makes a large amount of feed, and they have attributed this whole thing to the silo.

Mr. Hoxie — You should use some other word besides crazy. I do not believe they are crazy.

Prof. Henry — Well, I am thirty-six years old and I am growing reasonable. Some of these men have only fed it

one year, and I have seen people get very excited over short work.

Mr. Haaff— At an institute of five hundred farmers, practical, every-day farmers, this resolution was adopted unanimously:

“ Resolved, that the days of raising hay in northern Illinois are past, that the product of the corn field should be husbanded in some one of the several ways.”

Prof. Henry — That is important. My plea is to grow that big fodder corn crop, and then to that add the silo; but do not think you can grow a little bit of a patch of corn and have a great big silo. Get the corn started and then add the silo.

Mr. Carzel — We have heard a great deal in convention about improving the quality of our dairy products. I believe you said it helps our butter to a certain extent, but is it going to injure our quality of cheese? Is it best to give up hay and other things and fodder that we know does not, and try to adopt something else?

Prof. Henry — I believe not. In general I do not think it will, though you can feed it improperly. Mr. Beach says he sells his butter in the open market for 32 cents a pound.

Mr. Carzel — I was speaking of cheese. I know that all sell butter from ensilage milk, but I think is well demonstrated in the state of New York that poor ensilage spoils the cheese. In many places they refuse to take any milk from ensilage dairies. In Richland county the cheese makers throughout the county all claim that they can easily detect the taste and smell of the ensilage in the cheese.

Prof. Henry — You are speaking from experience?

Mr. Carzel — Yes, sir, and from my own experience; I have made cheese a little myself.

Mr. Clark — Where does the gentleman reside?

Mr. Carzel — I reside in Richland county.

Mr. Adams — Let me call attention to the fact that his remarks do not apply to good ensilage but to poor ensilage.

Mr. Sawyer — The cows will always pick out the good ensilage and leave the poor.

Mr. Clark — Suppose it is all poor?

Mr. Sawyer — I never saw a man who had a silo that contained poor ensilage.

Mr. Clark of Galesville — Do not be too enthusiastic. At our institutes we have men who are talking largely on this question of ensilage. One man living up in Clark county put up forty or fifty tons, put in forty tons a day with four or five men. He is not a practical man in anything he has undertaken.

He made a failure two or three years ago, and we expect he is going to fail again. Now take the case of that man; he has talked to institutes all winter, and if he happens to fail what is going to be the influence upon those he has been talking to?

Mr. Adams — It does not make any difference whether that man fails or not; if his ensilage comes out all right that is all we want to know.

Mr. Clark — But you know nothing succeeds like success. If one is advocating it in the state, a man goes in and he makes a failure of it, isn't it going to have a bad influence?

Mr. Adams — I would like to suggest to the gentleman that in conventions of this kind we do not want to discuss men so much as the things these men do in their business. Now we are talking about ensilage here and not men.

Mr. Clark — All right, ensilage is what this man has been talking about, and I am talking about ensilage; but I want you to understand this: what I want to speak about is what people think about what Professor Henry says. He is candid you see here. It develops everywhere, and I have confidence in him because he is candid. We have farmers as well as men engaged in other avocations in this country who go wild on such things as boiled meal, that used to be the rage, and other things played out long ago, and we want to be careful on this ensilage question and not run it to extremes.

Mr. Foster — I want to say a word in regard to this ensilage question in reference to the advice of Prof. Henry. Before building the silo I told you about last night, which I built this last summer, I talked with Professor Henry until he got tired of hearing me talking and asking questions.

He was just as cautious in speaking to me in regard to building the silo as he has been in speaking to this convention; but I found an undertone, a kind of an under current in it, "Foster, go home and build your silo" (laughter). There was that kind of advice in it, and I am glad I caught the undertone and went and built the silo, and it is paid for; I do not owe anything for it. I shall not fail on that account because I own the silo myself and the cows like what I put into it. I put in eight acres of ensilage corn and I wish it had been fifteen, but I did not have but eight and could not put in but eight, and I am feeding it out to-day, and I am candidly of the opinion — I say to you and the gentlemen of this convention — I am candidly of the opinion that I get more feed for my stock from that eight acres of ensilage corn than I will from the hundred and sixty of my farm besides. (Laughter and applause.) I believe that; I have estimated it. I am in this city most of the week, but I go home and stay at home over Sunday, and I take my pencil out of my pocket and estimate every time when I go home to see how it is working and what it is doing.

The encouragement I got from Prof. Henry was if I built my silo to build it right. I want to get that thought before this convention. He speaks now about building it cheap, but he does not mean to build a cheap silo in the direction of not building a good one as long as you do build. When he comes from his experimental farm in the summer his wife says, "I want to put up some of this fruit here; will you bring up some bottles and cans to put it in?" and if he brings home cans with a break in every one and his wife wants to give him some of that fruit next winter, he will not find it very well preserved; and so if you build a silo you will find that you have the same effect that this young man speaks of over here.

A Member — You will have rotten ensilage.

Mr. Foster — Yes. The way to get good ensilage is to build a good silo and to take care in putting it in. Do not put it in wet. On some of mine the rain came after a dry time, some of it laid down and the boys got in a hurry and

put it in, but you could not tell it and I could not when I took it out this winter.

Mr. Sawyer — Can the cows tell?

Mr. Foster — Yes, sir, the cows will tell, and they will eat the good ensilage, my man says who feeds them, quicker than they will the bran he puts in with it.

The increase in the milk was pretty noticeable when it was fed. I tried to put it up as well as I could. You want to do that in every instance. First, build your silo as it ought to be, put it in well and in a dry state, never when it has just rained on it or when there are heavy dews on it, and your cow will not only tell when she eats it but in the pail and churn when you have reduced it to butter.

Mr. Everson — At what stage of maturity do you put your corn in?

Mr. Foster — I put some of it in fairly green. My impressions are that I would let it stand as long as I dare to let it stand and feel satisfied I would be able to get it off before the frost.

Mr. Everson — Isn't it recommended that this B. & W. corn is the best for silos, and also that we should leave it to maturity, and is this large southern variety safe to rely upon?

Mr. Foster — I cannot answer your entire question. The corn I speak of, I cannot tell you whether it is B. & W. or not; some say it is and some say it is not; but it was corn brought from the great corn house of Dickenson in Chicago, and Dickenson says it is the same kind of corn.

Prof. Henry — It is Mr. Foster; and it is tremendously big corn, but we did not get the ears on it we expected.

Mr. Everson — I would ask Prof. Henry for a little light on that subject, and while I am speaking I want to say another word. Where I live the farmers are interested a great deal in this ensilage and silo question. We are trying to learn all we can, and in our case sometimes I find this,— I do not say it because Prof. Henry is here,—but the people want to know what Prof. Henry says in regard to that matter, and that, gentlemen, is authority. They do not ask what this gentleman said at the institute, but it makes a

great deal of difference what Prof. Henry says, and in what some of our speakers at the institutes say we have to make a great deal per cent. allowance.

Mr. Kizer — I have not for the last few years had the privilege of attending your conventions, but this fodder corn is a question that interests me considerably, and I want to ask the Professor about how far apart he sets, whether in rows, and the cultivation. We have been in the habit of raising our fodder corn on new broken land, and now have our land broken so far from the buildings that it is unhandy to haul the corn, and we propose to prepare a certain portion of land close to the buildings, for the purpose of growing this fodder corn, and I am anxious to know about its productiveness.

Prof. Henry — I wish to say to my friends here that I appreciate very kindly the good will expressed in many ways by the farmers of the state towards me and my work; but I realize it is not towards myself individually but toward the position — that here at the center of the state, in the center of learning and all experimental work, you naturally look for light; and the man that stands there, be he Henry, or Smith or Jones, must always stand as I shall hope to stand before you.

Now my friends, you know how different it is between a man's promises when he is trying to get an office and his actions after he has got there. Now I am in the place of the man who has got there, and I cannot do and say as many nice things, and wear as many broad smiles always on my face as the fellow can that is trying to get there. I think you will catch my meaning.

I want to be clearly understood now. I do not want any man to say that Henry is always on the fence and you never can get anything out of him. If you cannot get anything out of him it is because there is not anything to come out. If I do not know a thing I am not going to say it.

This is what I believe, that if the farmers will go home and plant twelve acres of this fodder corn, or more if you are a big farmer, if every one of you will do that I will guarantee to stand any loss you may incur because of loss in the fodder corn crop. In that I am safe. There is not a

farmer here who has a cow or horse to feed but what ought to grow a crop of corn fodder.

A Member — What kind?

Prof. Henry — I do not care what kind you grow; that is not important. You will find some who will tell you "Do not grow Burrill & Whitman or you will lose half your crop." That is not so. Grow some kind of fodder corn and grow it so as to make good nice stalks with ears on them; get a crop that will produce a maximum amount of fodder and ears, the fodder predominating, then plant your corn a little thicker. I say to every one of you grow that; if you do not grow it you make a grand mistake.

Having grown your fodder, that is the first thing, then I say to those who are dairying or have dairy stock to carry over — and I do not know but next year I shall advocate it strongly for steer feeding, it looks that way — then if by any possible hook or crook you can reasonably get in a silo do that; but first of all have the fodder corn.

To my friend who is so delighted over that immense crop in the silo, you would have had an immense crop without the silo. If he had not had anything to put in it he would not have had anything to come out of it.

The people who get the most excited over ensilage are the dairy farmers, and they have a right to. There is nothing the dairy cow loves better than something succulent and moist. She loves that kind of feed, and for the dairy farmer first and last they want the silo; and I think in a year from now I shall be advocating it for practical steer feeding in the same way. I do not believe it is a good horse feed, although I do not know, but from all the facts I can gather it is not a good horse feed.

The Chairman — I have fed it all winter and the horses do first rate upon it.

Prof. Henry — Yes, but I have other reports from men whose horses have not done well. I am feeding it to sheep, and it is not apparently suitable for sheep.

If there are lots of ears of corn in it pigs will do very well, but the man who talked the most enthusiastically about feeding ensilage to pigs last year, says this year they will

not eat it; he has lost the most of his enthusiasm, but he was honest last year and he is honest now.

Mr. Adams — I appreciate the method of treatment of this subject by my friend Clark and Professor Henry. I like to see a man very cautious when he takes up a thing, but it seems to me that our farmers should weigh the evidence about matters relating to his business just as a man does sitting on a jury. If twenty-five good men, in whom he has confidence, come in and swear to a certain fact, and nobody comes in to swear that it is not a fact, why he accepts that testimony and gives his verdict in accordance with it.

Mr. Clark — If I live, and nothing happens, I intend to put up a silo next summer.

Mr. Adams — Why don't you go slow and put it in next year? Now Professor Henry has been experimenting for these years, and his experiments have been full and valuable. They have been more full the last year than the preceding year; and from his experience he has concluded that the proper thing for him to do is to have seven silos instead of one. That is just the kind of work we want to have done here in the state of Wisconsin, and it seems to me that that fact is sufficient evidence to prove that proposition that three tons of ensilage corn is equal to a ton of hay. Now I haven't any silo. I am behind the profession. I put out fourteen acres of ensilage corn and expected to build two silos but did not do it for reasons that would not interest this audience, but I have raised that corn for two years and have fed it to my stock, and I find from the product of a single acre I can carry two cows all winter.

Mr. Clark — What kind of corn?

Mr. Adams — Southern ensilage corn. Now I might have carried another cow if I had only been smart enough and had a barn to cover up the ensilage cutter I ought to have bought. My corn went twenty-five tons of corn fodder to the acre. Professor Henry told you that three tons of that is equal to a ton of hay. Twenty-five tons of that is equal to eight tons of hay. Eight tons of hay would carry four animals all winter.

I want to say that the farmers who have built seven hun-

dred silos in Wisconsin the past year rise up as one man and say that that ensilage has the value I have given to it and that they have never fed anything to their stock with better results, and it seems to me a matter of economy that we come to adopt methods of this kind.

I would say to the farmers go ahead and mortgage your farms for two hundred dollars and put in your silos. It will not cost you over six or seven per cent. to put the mortgage on. Do not be superstitious about this matter of debt. A good business man ought to know enough about himself and his resources to run in debt two hundred dollars when he can save twenty-five or thirty per cent. Do not go crazy over this matter of ensilage, but be sensible and put in your silos. (Applause and laughter.)

The Chairman — Professor Henry's position is a good deal like a doctor's; when you ask his opinion about anything he says if the symptoms are so and so he thinks this and this, but if they are so and so he has some other disease, and when you get through you do not hardly know what the disease is. The fact of the business is it is unsafe to commit yourself. The farmers, too, do not study the matter thoroughly, and they do not always work in the right direction. To illustrate that I want to tell a little story. There was once a quack doctor and he told his boy to go out and scrape some bark, and says he, "You want to scrape some of the bark up; that is for an emetic. And then you want to scrape some more bark down; that is for a cathartic. "But," says he, "for God's sake don't scrape it both ways or no one can tell how it will work!" (Laughter.)

Now Professor Henry knows that the farmers scrape the bark both ways. He knows that different seasons will produce different ensilage, and different methods of handling will produce different results. He knows that there will probably be eighteen hundred silos built next year in the state, and out of those eighteen hundred silos, there are going to be some men cussing him because they built them, for they are going to make poor ensilage, just the same as we are making poor hay; therefore the necessity of going slow and telling people to be cautious. Mr. Adams is cor-

rect; it is a good investment. It is just what we want and I am highly pleased with it. I feed it to my cattle, I feed it to my horses once a day and to my pigs three times a week. I cure my ensilage ten days before I put it in the silo. They all do well on it and there is nothing wasted; but I can easily see that by some little mishap it might have been a good deal of damage and a failure, so I can see why some think Professor Henry is conservative and some think he is a trifle on the fence when he is not at all.

Mr. H. J. Hill—There was a neighbor of mine who put up a temporary silo—just set up loose plank and fixed it up. It would hold quite a large bed. He cut his corn pretty middling early—he had sowed it in drills, and he cut it up rather earlier than most people would cut their corn and let it stand until he commenced husking, and then he drew this ensilage corn and then got a lot of stalks that were husked which he put into this silo, and he has fed that all winter, and it has kept all right. I was looking at it the other day—perfectly sweet and nice. He feeds his milk cows that with a little bran and shorts and feeds nothing else, and they are in very good condition indeed, and if we can have silos in that way it is a very cheap investment, and there is no danger in feeding I think.

I heard a statement that in New York state, at the factories where they condense milk, they will not allow their patrons there to feed ensilage—and here I understand from this young man that it affects cheese. Now, if that is the case, I think we ought to go a little slow, and especially if we put it in green. I know but very little about it as I never built a silo, and I have not been here to hear all the discussion.

Prof. Henry—The young gentleman who spoke is one of the short course agricultural students. Our class has been here in constant attendance during this convention. This is one of the young men who has come in to Madison to study. I know Mr. Carzel is a dairyman bred in the bone, it runs in the blood, and although a young man I think his observations ought to go into print at this time, and I wish

he would state in a few words whether they detect anything in the cheese.

Mr. Carzel — I can not tell much about it, perhaps, as I am not much of a talker. I have not had much experience, being so young. In our county the farmers there were affected with the craze for ensilage this last year, and went into it very extensively. Several who had dairies of about fifty milch cows put up silos and filled them with ensilage. Those dairies put their milk in with the rest of the milk of the factory, and of course that made their percentage not more than one-third of the amount of milk that came into the factory; but the cheese makers say — and they are probably as experienced cheese makers as there are in the state — Mr. Chandler took several prizes a year ago at the Dairymen's show in Chicago for dairy products, and Mr. Fish is the cheese maker that took the sweepstakes premium at the New Orleans Exposition, and also the sweepstakes prize at Chicago last fall, and others there have taken premiums there at dairy shows, proving that they are experienced men and their testimony in regard to this ought to be of some consequence — and they say that it is a rule throughout this county, where this ensilage milk comes into the factory, that they do detect it decidedly in the milk, smell it, and in the cheese made from it they can taste it; especially where much of it comes in. Of course where there is not over one-third it does not affect it so much.

We hear that if ensilage is rightly taken care of, or put up right, it will not produce this effect. We find a difficulty with clover hay, or rather clover grass. We cannot see that there is anything bad about it, or anything that will affect the milk, but we find it spoils our cheese, and Chicago buyers who come into the factory at that time will not touch our cheese at the regular price because the clover affects it.

A Member — Does that continue after the cows have been on close pasture some length of time?

Mr. Carzel — Yes, sir, we find it continues as long as the clover is rank and large, but they do not get so large a quantity and of course it does not effect it then; but there

have been ample tests of this clover in our town, and also I believe in New York state where they have tested it; and when they are talking about ensilage in this convention I should like to see all sides brought up, especially as we never hear anything about cheese. We hear about butter; it is all right about butter. When the question was brought up in one of our dairy meetings in Richland county whether it would hurt butter, "Why no," they said, "That is just the thing we want for butter;" it was just the acid they wanted; and when they came to speak about cheese they said, "Oh no it don't affect cheese; it don't affect the milk at all."

Mr. Clark — Do you know of any reason why it should not affect butter as sensibly as cheese?

Mr. Anderson — Alsac clover will not hurt your milk or cheese and will give you more and better results than red clover, for I have raised that clover for thirty years.

Mr. Carzel — We find that white clover and Alsac clover will bloat the cattle when turned into it just as quick as red clover. That is probably the difficulty and what tends to spoil the cheese. The odor that comes from that gas in clover, that causes the taste in the cheese.

Mr. Adams — The reason that the clover hurts the cows is probably because they eat too much of it, and they feed more than they can digest. Alsac clover will never hurt a cow, because she cannot get enough of it on a ten acre lot— (applause and laughter.)

Mr. Anderson — I want to say that Mr. Adams has never raised as much clover of any kind as I have.

Mr. Adams — I never want to.

Mr. Anderson — My cows do not bloat. I keep a water trough, and I keep a little ashes and salt in the trough where the cattle can get it. They eat as much as they please every day. The bloat comes from the cattle eating a great deal of clover when it is in bloom, and it causes fermentation of the food in the stomach, and every person knows that the alkali in the ashes will neutralize that acid in the stomach and the cattle never will bloat. I had eighty acres of it last year, and if it had not been for that I would have been badly off. In regard to the amount on an acre, I had a field of alsac

clover year before last that produced five and a half bushels of clover seed to the acre and a ton and a half of hay, and as good as the best red clover hay I ever raised, and the cattle eat it in preference to the best red clover hay.

Mr. Sawyer — I am enthusiastic on ensilage because I have tried it. My silo when first built held over sixty tons and the first winter's results in dollars received was on five cows, \$3.50 a week for twenty-three weeks above what it would have been if I had not had my silo. A neighbor who had no silo, who had cows as good as my cows, I might say from the same herd, got two pounds of butter per cow less per week, and that butter at 35 cents per pound you will see was \$3.50 in my pocket for butter alone.

Mr. Clark — I told you I intend to build a silo next year if I live, but I do not want to plant this B. & W. corn. I planted some this year to see what it would be, and my boys thought they would as soon cut small trees, and I would. It grew fifteen feet high, and the butts were as big as my wrist, and that is not the kind of corn I am going to fill my silo with, if I ever build one; it is too big.

I am glad to see a man as conservative as Professor Henry. I told you what he says has more influence than any man in talking over these main crops and this thing and that every year. We want men like that at the head of our institutions in this great and prosperous state. I am talking business. For years this ensilage has been advocated enthusiastically. Now do you want to raise corn like they did the first year, get a good crop of corn and as soon as it is fairly shocked begin to cut it with 85 per cent. of water in it and put it in your silos? Is that the way to do it do you think now?

Mr. Sawyer — Yes.

Mr. Clark — Well, I will not do it; you cannot talk that down me. If I am going to do any such thing I am going to wait until I get a crop of corn. That is what I planted it for, and Professor Henry tells us that when the corn in the stalk is seared over, then is the time the corn stalk is the most valuable for feed. My neighbors and I cut our corn when it was too green, because we wanted the fodder. We

did not cut it as early as this man did and put it in the silo with 85 per cent. of water, but I am going to raise my corn — Dent Yankee corn, the Pride of the North it is called — and when it begins to glaze I am going to put it up, about sixteen hills in the shock. I am not going to plant this great corn because there is too much to handle, and I can raise all I want by planting smaller corn.

Mr. Adams — I want to say to the gentleman that he can have no higher opinion of Professor Henry than I entertain according to my capacity; but I heard Professor Henry say very emphatically that he would rather have the credit that he gave to John Gould for traveling around in this state and inducing the farmers to build silos than almost any honor that could be heaped upon him. So much for Professor Henry's opinion on that subject.

Now John Gould tells me that in Ohio where they can raise more and better corn than we can in Wisconsin, he got a hundred bushels of perfect ears. Any number of farmers scattered through the twenty counties of this state have told me that their ensilage corn matures perfectly if they do not plant it too thick; give it good cultivation and put it in early and they will get all the way from sixty to a hundred bushels of ears.

Now I agree with my friend that we want corn. We want a mixture of grain ration with the corn fodder; that gives something which the animal can get hold of and digest, but until you can prove that when you put in these big butts there is no virtue in them, and until he can prove that the cows do not eat it when they come to it, and give milk because they eat it, then it seems to me he ought to draw it a little mildly on the big corn.

Mr. Clark — I would not raise it because it is too awkward to handle.

The Chairman — That long corn feeds better than short corn.

Mr. Clark — That may be. No, sir, Brother Adams, I want some feed, and I will tell you this, don't take any stock in what they can do down in Ohio. You cannot get a crop of this ensilage corn.

Mr. Adams — You say we cannot raise corn in the stalk, but we have done it for years. I have sixty or seventy-five bushels per acre of that southern corn.

The Chairman — This is a big state; what will do in one end of the state will not do in another, perhaps.

Mr. Clark — I have no doubt you can raise more fodder if you go without the corn.

Mr. Adams — But we get the corn.

A gentleman in the audience has handed me an ear of that corn grown last year. I want to say in putting it in put it in as early as you possibly can, and if you want ears plant it thin and you will get ears.

Mr. Carter — I do not know but it is all right to plant this big Southern corn in this latitude if you are going to put it in the silo, but my experience is it will not do for the common farmer to plant. He cannot depend on getting a crop of corn. Two or three years ago we were short of seed corn and many farmers sent and got that corn and planted it; and the consequence was they lost their crops. Their corn did not mature and they did not have any ears that got ripe. It was a degd loss to them. It may be all right for the silo, but it seems to me that if I was going to raise corn for the silo that I would plant some corn that would ripen in time, and plant it thicker.

Mr. Kizer — I do not think the stalk from the Southern corn would be worth much to the animal if he did eat it.

The Chairman — You are mistaken, Mr. Kizer.

Adjourned without date.

CONTRIBUTED AND SELECTED PAPERS.

OUR GRASSES—ADAPTATION TO THE VARIOUS SOILS, CULTIVATION, AND ANALYTICAL VALUE.

BY PROF. W. J. BURDICK.

A very brief glance at the vegetable kingdom will convince us of the vast importance of the grasses to the whole family of man. A more minute and careful survey of this great field of observation will make us wonder that the agricultural world has been content for so many generations to remain in so much ignorance of their nature and properties as we know they have always been. We all, without exception, derive a great deal of pleasure from contemplating the beauty of the grass. "A thing of beauty," it "is a joy forever;" it exhilarates alike the prince and the peasant, the poet and the philosopher, the merchant and the mechanic, and cheers and gladdens all classes and conditions of men. Destroy the rich meadows and pastures of our farms and how much of the pleasure as well as of the profit of a farmer's life would be blasted. Remove the little green grass plat from the contracted yard of the citizen and how much would the enjoyment of his domestic life be narrowed. When the prophet Isaiah would express the very extremity of desolation, he exclaimed: "The grass faileth, there is no green thing."

While the grasses are adapted to gratify the visions of all classes of mankind, they are reserved for those who study them most lovingly and persistently and observe with careful scrutiny all the minute details of their organization. These alone can appreciate the exquisite grace and harmony of their forms and motions, and the wonderful adaptation of their structure to the exigencies of their positions and to the welfare of man. These alone can descry the

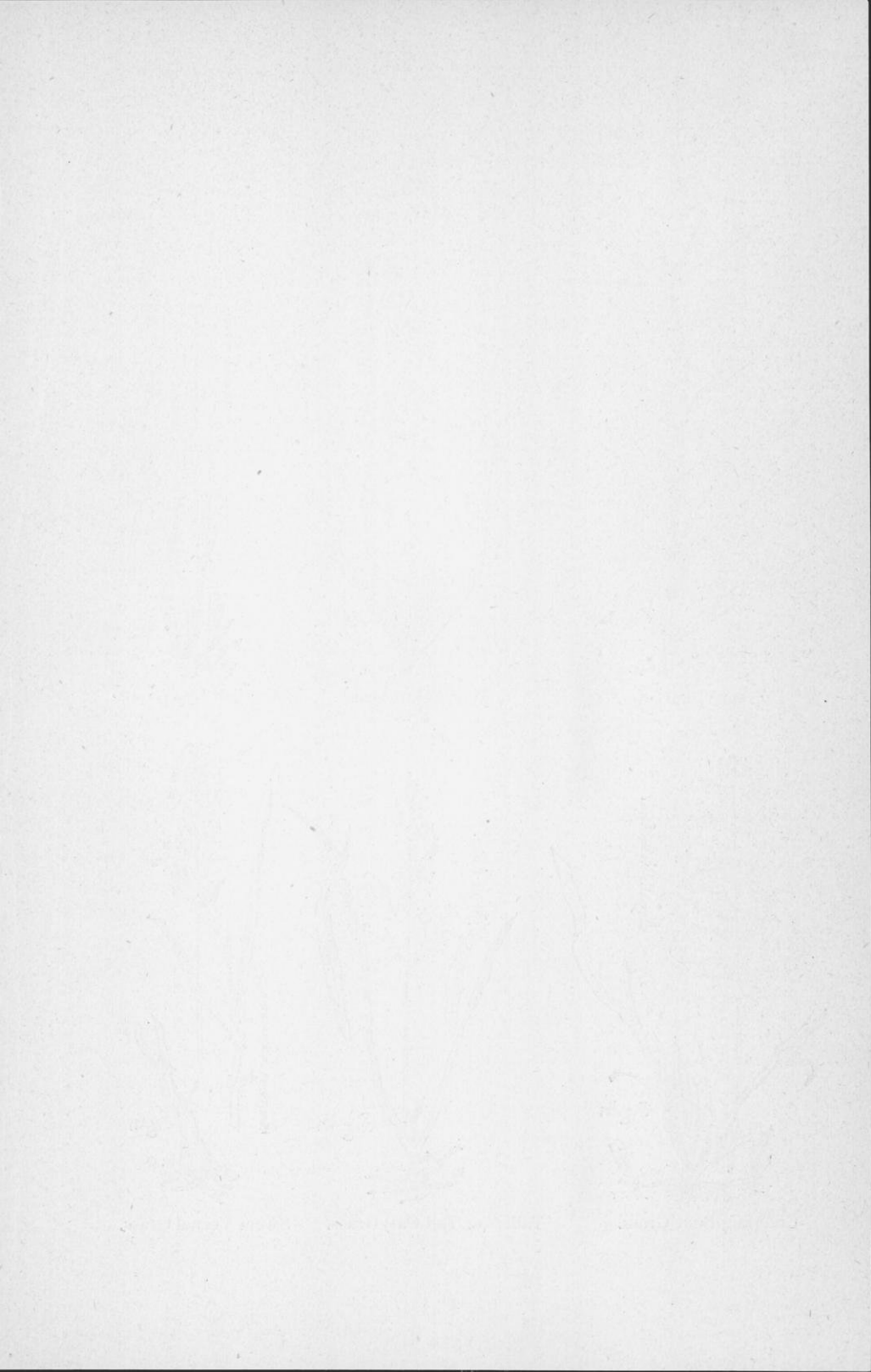
marvelous uniformity of their plan exhibited in the widest diversity of structure, which attests the touch of the Divine finger in their organization, compelling them reverently to adopt the grateful exclamation of the psalmist: "Oh, Lord! how manifold are Thy works in *wisdom*, hast Thou made all; the whole earth is *full* of Thy riches." The latest and most certain conclusion of science coincides with the Apostle's statement that "all flesh is grass." They demonstrate most conclusively that in saying it he yields to no mere poetic fancy, but gives utterance to a sober and unvarnished fact. The elegant contour of the human form, the ear that drinks in the melody of song, the tongue that communicates the utterance of the soul, the sparkling eye, the ruby lips and every portion of our material frame owes its origin either mediately or immediately to the grasses of the field. It is their appointed function to gather and combine the scattered elements of inorganic matter in such proportions and in such forms as are best calculated to build up all the tissues which are essential for the manifestations of animal life. They extract saline ingredients from the rocks, hydrogen and oxygen from the rains and dews, carbon and nitrogen from the soil and the atmosphere, and mingling these together by a subtle and mysterious chemistry which man can never imitate, they lay these treasures at his feet in a form exactly fitted for his purposes. Very precious, therefore, is this promise of the *Almighty*: "I will send grass into thy fields for thy cattle that thou mayst eat and be full."

WIDE DIFFUSION OF THE GRASSES.

While the grape, the fig, the orange, the bread-fruit tree, the vine and most of the other productions of the vegetable kingdom are restricted to narrow belts of latitude, the grasses flourish in every region of the earth. They spring up spontaneously on the plain, on the mountains, and in the valleys by the water-courses. They unfold their graceful panicles beneath the dull and leaden skies of the arctic region. They adorn the temperate zones with their refreshing verdure, while beneath the ardent

skies of torrid climes their culms swell out into almost gigantic proportions vieing in some of their varieties with the trees of more northern regions. Their leaves and culms furnish food for cattle, the seeds of inferior species furnish food for birds, while those of superior species furnish nutriment for man himself. The importance of the grasses is shown in the relation which they bear numerically to the total vegetation of the earth. At least one-sixth of the plants that grow upon our planet belong to this family. Two hundred and thirty (230) genera embracing 6,000 distinct species of grasses are known to botanists, and new genera and species are constantly revealed to us by the reports of travelers and the researches of domestic observers.

Two hundred and fifteen (215) distinct species of grass are capable of being cultivated in Great Britain, and 133 species are proved to be indigenous in that island. Mr. Flint described 125 varieties of the grass growing in the state of Massachusetts. Prof. Torrey, in the Natural History of New York, describes forty (40) varieties of the genus *Poa*, twenty-seven (27) of the genus *Agrastis*, and a total for the state of 125 varieties. We do not command the late data for the varieties which are growing in this state; however we have formed the conclusion that if this subject was thoroughly investigated, the number of the different varieties of the grasses growing in this state would equal if not excel all of the northwestern states. This wide diffusion of the grasses is due in some degree to the care which nature takes for their production and protection. The seeds of some varieties are provided with hooks by which they attach themselves to the hair and wool of the grazing animals, and to the clothes of man, by which they are transported to regions widely remote from their origin. These seeds, which form the favorite food of many birds, are retained in their stomachs, and are carried many hundreds of miles before they are voided, they then germinate under favorable circumstances, and thus the grasses of widely remote regions are interchanged; the seed are very light and highly polished, which fits them for diffusion



[The cuts illustrating this article were kindly loaned by George Brunder, Esq., Milwaukee, Wis.—SEC'Y.]



Bermuda Grass.



Wood Hair Grass.



English Rye Grass.



Creeping Bent Grass.



Taller (or Tall Oat) Grass.



Sweet Vernal Grass.



No common name.



Red Meadow Grass.



Red Top Grass.



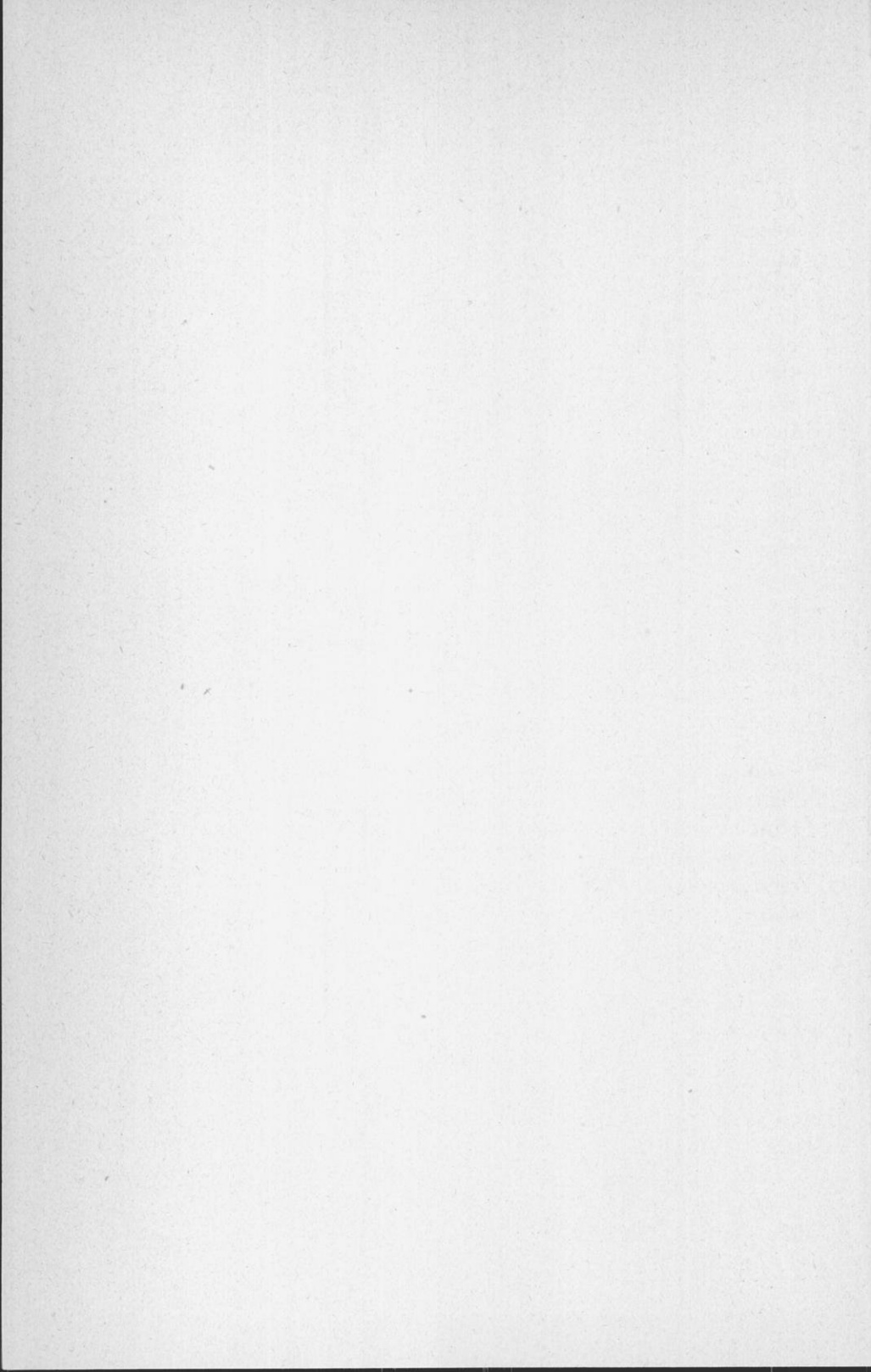
Rough Stalk Meadow Grass.



Tall Fescue Grass.



Red Fescue Grass.



through wide area by the combined agencies of the winds of winter and the frozen snows. Many of them are furnished with rhizomes or creeping roots, which send forth many shoots and rapidly cover the ground where a single stem has once effected a lodgement. The annual decrease of the stems affords a constant supply of food for the successive growth of the plant. Nature has also provided for their protection after their first establishment in various ways. A large proportion of the species are perennial; they are uninjured by the cropping and the laceration of their herbage which is soon replaced by the internal energies of the plant; on the contrary this very laceration which would utterly destroy many families of plants is really necessary for the most vigorous growth of many species of grass, and is essential to their continuance on the same area. The creeping roots, though bruised and torn by the heavy tread of cattle, are not injured by it, and the winter's cold and the summer's heat are alike unable to extinguish the principle of life within.

OUR GRASSES.

The sense which we, use the term Our Grasses, conveys the central idea that we will confine our discussion to the grasses which are adapted to the various varieties of soil in this state, therefore we will now inspect the formation of the true grass; also notice the difference in the formation of the sedge plant which is very often classed with the family of the tine grasses. The tine grass is known by the following rules, viz.: 1st. Round culm or stem and hollow with only two exceptions, the *Poe Compsesa*, or blue grass, which is best known to the common observer. 2nd. The true grass has only two (2) rows of kernels on the stem. 3rd. The tine grass always flowers. 4th. The leaf, stem or sheaths on which the leaf rests, will unfold or open to the joint of the stem without tearing.

Sedges may be known: 1st. The stem is trangubul in form. 2nd. The stem bears three rows of leaves. 3rd. The leaf stem or sheath is solid and will not unfold without tearing. Sedges grow in wet and moist land, in the

bottoms of ditches and on sandy land. The sedge is of no agricultural value to man or beast. From a collection of about 1,200 varieties of the grasses (which we have in our Herbarium) we will now select and list the grasses adapted for the various soils of this state for cultivation. Pardon the use of the Latin terms for we did not intend to use the Latin names, but we find that to give a clear and comprehensive distinction of the various tribes of this family of the grasses it has compelled us to use the generic term in the Latin name, viz.:

- Agrostis vulgaris* (Red top).
- Agrostis alba* (White top).
- Daatylis glomerata* (Orchard grass).
- Phileum pretense* (Timothy).
- Arrhenatherum avenacrum* (Tall oat grass).
- Festuca elation* (Taller fescue).
- Festuca pratensis* (Meadow fescue).
- Festuca ovina* (Sheep fescue).
- Festuca durinsenla* (Evergreen fescue).
- Festuca enbra* (Red fescue).
- Festuca domestic gown* (English blue). }
- Paa pratensis* (Kentucky blue, June grass).
- Paa compresa* (Wire, blue grass).
- Paa anna* (Dwarf spear grass).
- Paa serotina* (Fowl meadow grass).
- Paa augustifolia* (Tall spear grass).
- Paa nenuralis* (Wood meadow grass).
- Paa alsodes* (No English name).
- Paa inviclis* (Rough stalk meadow grass).
- Burns molis* (No English name).
- Triticum repens* (Quack grass).
- Triticum caninum* (No English name).
- Lolium parrene* (Perennial rye grass).
- Lolium italicum* (Elatian rye grass).
- Cynosurus cristatus* (Crested dog tail).
- Alopecurns pratenses* (Meadow fox tail).
- Anthroxanthum odoratum* (Sweet vernal grass).
- Holcut lenatus* (Meadow soft grass).
- Phaloris, arundincea* (Ribbon grass).

Glycerra norvata (Monna grass).

Glycerra Agutica (Reed meadow grass).

In the division of the analysis of the grasses we will give a short description of the above list. Therefore, we will now review the third division of our paper, which is, to-wit:

CULTIVATION OF OUR GRASSES.

“Nature can not be conquered except by obeying her,” is a golden adage. “The power of man over nature he must conform to her laws.” so saith Sir John Harshall. Therefore, with the above quotations in view, we shall endeavor to follow the laws of nature in this discussion, as this is a vital question to the farmers of this state. Again, we propose to show the importance of a more thorough knowledge of the value of the grasses which are growing or can be cultivated in this state, to the mass of the farmers who are now engaged in mixed husbandry. We will note the present condition of our meadow land, and look for the causes for the inferiority of the quality of the products. We can see from what has been said, that nature offers the most magnificent premiums for experts to improve the production of our grasses. It is therefore clearly our interest to search for the causes of our admitted deficiencies and to learn the condition which she imposes upon the winners of her magnificent prizes. The main reason of the inferior condition of our meadows is, that very few farmers ever *try* to improve them. It will not be denied that farmers in general bestow much less care or thought or science or study or labor upon their meadow than they do upon their green lands. Not one farmer in a thousand knows the names of the grasses growing on his farm, or can he discriminate between them. Grass is grass, and that is all they trouble themselves to know, like Wadsworth’s Peter Bell:

“A primrose by the river brim
A yellow primrose is to him
And nothing more.”

Very many farmers are not aware that they have any other varieties than timothy and clover (which is not a grass) and red top growing on their farms although they may have

a dozen or twenty other varieties; much less do they understand the peculiar properties and the relative values of the different species. The farmer goes on to his meadow when the proper season comes, cuts his grass and converts it into hay, this being accomplished he thinks no more about it until the corresponding season of the ensuing year when he goes through the same process again. In consequence of this apathetic spirit he gives himself no trouble to reseed his meadow or to manure it, or to irrigate it or to drain it or to protect it from being parched by cattle in autumn or in winter. Even when they are first forming their meadows after tillage there are thousands of farmers who never sow any seed upon their land at all, leaving it wholly to birds and to the winds and the waters to supply the necessary seed. Among those who yearly sow grass seed on the lands intended for meadows, very few sow any other seeds than timothy and clover. In New England it is very common to sow red top (*Agristis Vulgaris*) in Pennsylvania, blue grass (*Poa protensis*) is sometimes sown, but those who have taken this trouble congratulate themselves on having done a virtuous thing and seem to think when they committed these few seeds to the bosom of the earth they have done all that man *can* do, forgetting that in the fine old meadows of England which are the envy of farmers and the admiration of the world, not less than thirty (30) different species are found growing in a single sod.

There is another cause for the inferiority of our meadows which though often overlooked, is of great importance, and this is the number of useless, noxious weeds that find a place among them. From a very careful examination of large numbers of the meadows during the past season in this state, the following is the result, viz.: In wet meadows out of thirty plants four were useful, twenty-six useless or weeds. On dry upland, out of thirty-eight plants eight were useful, thirty useless. In most meadows out of forty-two plants, seventeen were useful, twenty-five useless. This ratio will favorably compare to the condition of many of the meadows in this state. These foreign intruders injure the useful plants by their shade and rob the roots of the nutri-

ment existing in soil. If the farmers of this state would rid themselves of this nuisance it would add to their income from ten to fifteen millions annually. How can this result be accomplished? Can it be done by the use of the plow and reseeding with one or two varieties of the grasses? Most emphatically we answer *No*. Why not? Because it is in direct opposition to the laws of *Nature*. Let us look at the evidence to sustain this proposition. The late Hon. John Stanton Gould of New York is authority for the following statement:

“If the soil be prepared thoroughly and made as rich as manure can make it and sown so thickly with one kind of grass seed that the seeds will actually touch each other, it will be found that after germination many of the young plants die out, leaving interspaces of unoccupied soil between the plants that still live. These interspaces may be filled ever so often with fresh seed and a like result is sure to follow. It is impossible to fill them with the same species as the living will not tolerate any neighbor nearer than a prescribed distance, a distance determined by a greater or less abundance of the species of food required by the particular species of the grass cultivated. If with a given amount of this food the plants will grow within three inches of each other, as the amount decreases they will require intervals of six inches, nine inches, twelve inches, so on. Each soil has therefore a capacity for bearing a maximum number of plants of one variety of grass which can under no circumstance be excelled. If these unavoidable interspaces be sown with seed of another species of grass a certain number of its plants will grow and the remainder will die after germination, as before the plants that grow will not interfere with those of the first variety and the crop will be materially increased; still there will be spaces of unoccupied soil and the ground will not be thoroughly turfted over until from five (5) to twenty (20) varieties are growing upon it.”

Practical experience has clearly shown that any soil will yield a larger and more nutritious crop when sown with ten (10) to fifteen (15) species of seeds than when one or two are growing. Animals flourish much better on mixed

grasses (green or dried condition) than they do on a single species, however nutritious that species may be. The animal tissues require numerous elements for their support, and these elements are furnished in great abundance and better adapted for assimilation by a mixture of dissimilar grasses. Nature teaches this lesson very clearly independent of theoretical considerations. The horse, when at liberty to choose, will always leave the single for the mixture. In relation to the care of meadows we will give the result of twenty years' experience in this state in cultivation of grass land viz.: Do not use the plow on the low land, but cultivate the surface of the soil; sow a combination of seed adapted to the soil; keep off the stock; do not use it for pasture, and you will receive a large yield of hay annually from your land. This fact has been demonstrated this past season from many meadow lands in this state yielding from two to three tons of hay per acre, of splendid quality. Upland meadow can be improved by sowing a mixture of different varieties of grass seed and lightly cultivating the surface soil, also a top dressing of manure. This method is not expensive to the common farmer. We do verily believe that all the meadow lands in the state should be made to yield three tons per acre.

We will now note the condition of the pasture land in this state, as they were during the past season. As a general rule the pasture lands of this state are not as productive as they should be to supply a generous food ration during the grazing season. What should be the standard amount of pasture land to yield a generous food ration per head of grown stock during the grazing season? We answer from three-quarters to one acre. Has this standard been established in this state? Again, we answer, it has even this dry season. During the fall of 1878, a tract of land containing 100 acres was cultivated by surface work with a combination of grass seed adapted to the soil. This tract of land was used for a meadow a few seasons, and the stock was not allowed to feed off the aftermath during the time it was in as a meadow. Since the change was made to pasture use it has supplied a full ration at the rate of one acre per head. The

past season sixty acres of this pasture lot was mown giving a yield of ninety tons of a splendid quality of hay, at the same time supplying food rations for sixty cows, thirty head of two-year-olds and ten horses. Soil, alluvial bottom lands. In an adjoining section of that tract of land there are pasture lots which will supply food rations at the rate of three-quarters acre per head of stock. This result is accomplished by using a combination of grass seed which are adapted to suit the soil, also to mature at different periods of the season for growing of grass. The above mentioned tracts of land were never plowed. To illustrate the value of good grass for the production of milk and butter, we will report the product of two cows owned in the central portion of the state, giving the monthly amount of milk, also the amount of butter it produced during the date from May 1 to November 30, 1887, viz.:

May.....	2,354 lbs	May.....	112 lbs 11 oz butter
June.....	3,644 lbs	June.....	124 lbs 7 oz butter
July.....	2,184 lbs	July.....	80 lbs 8 oz butter
August.....	1,881 lbs	August.....	79 lbs 5 oz butter
September.....	2,049 lbs	September.....	86 lbs 7 oz butter
October.....	1,975 lbs	October.....	92 lbs 2 oz butter
November.....	1,789 lbs	November.....	88 lbs 2 oz butter
Total.....	14,876 lbs	Total.....	663 lbs 10 oz butter

In this may be added the milk used by a family of three persons. The cows from which this product was obtained are of large size weighing about 1,100 pounds. The cows were fed only on grass in its season, with hay and dry corn stalks the balance of the season. Return lot alluvial soil We challenge a better showing on high feed for profit.

We will now introduce the following table showing the effect of a drouth on the production of milk valued at 75c per hundred pounds:

Amount of milk received per month at the different factories copied from their books.

FROM A HERD, 12 COWS, VIZ :

	Pounds.	Gain or loss.
May	10,736	.....
June	9,728	1,008, loss.
July	8,014	1,114, loss.
August	5,717	2,297, loss.
September	6,830	1,113, gain.
October	6,283	557, loss.
Total	47,318	
Average per cow (pounds).....		3,942
Value, at 75c per hundred.....		\$29.56
Total amount received		\$354.76

This herd was fed upon grass only till the last week of October.

Pasture: river bottoms.

B HERD, 24 COWS.

	Pounds.	Gain or loss.
May	15,174	.....
June	18,761	3,587, gain.
July	15,208	3,553, loss.
August	13,323	1,785, loss.
September	14,767	1,444, loss.
October	12,516	2,251, loss.
Total	87,749	

Average per cow	3,739
Value at 75c per hundred.....	\$28.04
Total amount received	\$672.02
Difference between A and B per cow (loss).....	\$1.52

This herd was fed with rations of green corn fodder from the 15th of August.

Pasture: like A.

C HERD, 13 COWS.

	Pounds.	Gain or loss.
May	10,759	....
June	9,799	960, loss.
July.....	7,090	2,769, loss.
August	6,560	530, loss.
September	6,928	369, gain.
October.....	5,363	1,566, loss.
Total	<u>48,525</u>	

Average per cow.....	3,886
Value at 75c per hundred.....	\$29.14
Total amount received	\$378.82
Difference between A and C per cow (loss).....	\$.42

D HERD, 34 COWS.

	Pounds.	Gain or loss.
May.....	18,466	....
June	15,052	3,414, loss.
July.....	10,733	4,319, loss.
August.....	8,830	1,903, loss.
September.....	9,661	831, gain.
October.....	7,012	2,649, loss.
Total.....	<u>69,744</u>	

Average per cow (pounds).....	2,041
Value at 75c per hundred per cow.....	\$15.38
Total amount received... ..	\$522.92
Difference between A and D, per cow.....	\$14.18
Total loss	\$482.12

This herd was fed with rations of green fodder corn from the middle of August. High land pasture.

E HERD, 27 COWS.

	Pounds.	Gain or loss.
May	14,754	.....
June	12,545	2,209, loss.
July	8,771	3,774, loss.
August.....	8,028	743, loss.
September.....	7,218	910, loss.
October.....	4,389	2,828, loss.
Total.....	55,705	

Average per cow (pounds).....	2,063
Value at 75c per hundred per cow.....	\$15.46
Total amount received	\$417.42
Difference between A and E, per cow.....	\$14.10
Total loss.....	\$380.70

This herd was pastured on low land which the drouth had killed a large portion of the grass. 20 acre addition to the field. Green corn fodder was grown.

F HERD, 24 COWS.

	Pounds.	Gain or loss.
May.....	10,830	.....
June	10,199	531, loss.
July	9,878	321, loss.
August.....	6,115	1,763, loss.
September.....	6,326	211, gain.
October	5,101	1,225, loss.
Total	48,640	

Average per cow (pounds).....	2,027
Value at 75c per hundred per cow.....	\$15.20
Total amount received	\$364.80
Difference between A and F, per cow.....	\$14.24
Total loss.....	\$341.86

This herd was fed rations of green fodder corn from the middle of August. Low land pasture which the grass was killed by drouth.

We will abridge this table by using only the reduced result of this inspection, viz.:

	No. of cows.	Value per cow.	Total value received.	Profit per cow on grass.	Total value of loss.	Remarks.
G Herd.....	27	\$25 30	\$548 10	\$9 26	\$250 02	Low land pasture, green corn fodder.
H Herd.....	28	18 88	528 64	10 68	320 04	Low land pasture, green corn fodder and one ton of bran.
I Herd.....	28	18 75	525 00	9 81	274 68	Low land pasture, green fodder corn.
J Herd.....	30	22 94	688 94	6 62	198 60	High land, fed hay and bran in June, green corn fodder in August.
K Herd.....	10	17 62	158 58	11 94	119 40	High land, green corn fodder, bran.
L Herd.....	9	21 66	194 94	7 87	70 92	Low land, green corn fodder from August 12th.
M Herd.....	9	23 88	214 47	6 73	60 57	Low land pasture, green corn fodder, no bran.
N Herd.....	27	17 62	475 74	11 94	302 13	High and low land pasture, green corn fodder.
O Herd.....	8	11 39	91 12	18 17	145 36	High land pasture only, no other rations.
P Herd.....	12	17 75	213 00	11 81	141 74	High and low land pasture, no other rations given.
Q Herd.....	10	21 42	214 40	8 14	81 40	Low land, green corn fodder, light ration of bran.
R Herd.....	20	21 36	427 20	8 20	164 00	Low land, ration of bran each day, corn fodder.
S Herd.....	19	10 97	208 43	18 59	302 21	High and low land, green pasture, very poor, no ration.

Please to examine the above table. Note difference of the value of products of the various herds which are used, noticed in the comparative work. These different herds were selected to represent the conditions of the various sections of this state during the past season, as affected by the drouth. The practical lesson taught in this comparative table, the necessity of a thorough attention to the various grasses which are growing in our pasture lands, which do not withstand severe drouth. Also this inspection demonstrates the value of grass in the production of milk. Note the report from A herd of cows which was fed on grass alone until the last week of October, as compared to S herd. A received \$29.56, S received \$10.97 per cow, leaving a difference of loss to S \$18.59 per cow, total on herd, \$303.21, representing S loss in proportion to A respectively.

For an apology for the introduction of the foregoing table, we were requested to study the effects of the drouth on the cultivation of grasses, and their value in the production of a food ration for all classes of stock. The above comparative table will explain the effect on the production of milk, with the assistance of a committee of good, practical dairymen, which is a correct report. As we have introduced the result of good standard pastures as compared to those noted in the table, we will now state the manner in which they were improved. It must be understood that land must be well drained to secure the most nutritious quality of grass, hence the drainage topic is discussed in another paper, and we shall not review the various systems employed in the call of the improvement of our grass land. We do advocate the use of the plow in the general work to renovate and re-seed our grass land. Work the surface soil to the depth of one inch for a seed bed. Use any implement that will do good work. Plow only the very roughest surface land that is to be used for a meadow lot. A very important consideration in this work is not to cover the combination seeds too deeply, which is shown by the following table:

NAMES OF GRASSES.	No. of pounds per bushel.	Av. No. of seeds in an ounce.	Depth to cover the seed to secure the largest prct. of growth.		Depth to cover which one-half the seed will germinate and grow.		Depth to cover which will answer for one bus.	Per cent. of loss in drying.
			in.	in.	in.	in.		
White top.....	12	500,000	0 to 1	1 to 1	1 to 1	1	.65	
Red top.....	14	425,000	0 to 1	1 to 1	1 to 1	2	.63	
Soft slengre.....	14	132,000	0 to 1	1 to 1	1 to 1	2	.65	
Meadow flax seed.....	5	76,000	0 to 1	1 to 1	1 to 1	2	.57	
Sweet veind.....	6	76,000	0 to 1	1 to 1	1 to 1	2	.45	
Tall oat.....	7	21,000	1 to 1	1 to 1	1 to 1	4	.....
Slender wheat.....	10	15,000	0 to 1	1 to 1	1 to 1	2	.....
Crested doghead.....	10	28,000	1 to 1	1 to 1	1 to 1	3	.....
Orchard.....	14	40,000	0 to 1	1 to 1	1 to 1	2	.24	
Hard Fescue.....	10	36,000	0 to 1	1 to 1	1 to 1	2	.....
Tall Fescue.....	14	20,000	0 to 1	1 to 1	1 to 1	2	.52	
Meadow Fescue.....	15	26,000	0 to 1	1 to 1	1 to 1	2	.65	
Slender spike.....	15	24,000	0 to 1	1 to 1	1 to 1	2	.60	
Sheep spike.....	14	64,000	0 to 1	1 to 1	1 to 1	2	.65	
Red spike.....	15	39,000	0 to 1	1 to 1	1 to 1	2	.45	
Red Meadow spike.....	14	58,000	1 to 1	1 to 1	1 to 1	2	.35	
Meadow soft.....	7	95,000	1 to 1	1 to 1	1 to 1	1	.30	
Italian rye.....	14	27,000	0 to 1	1 to 1	1 to 1	3	.....
Perennial rye.....	14	15,000	1 to 1	1 to 1	1 to 1	2	.50	
Millet grass.....	25	83,000	1 to 1	1 to 1	1 to 1	2	.38	
Red canary.....	48	42,000	0 to 1	1 to 1	1 to 1	2	.32	
Timothy.....	45	74,000	0 to 1	1 to 1	1 to 1	2	.50	
Wood meadow.....	14	175,000	0 to 1	1 to 1	1 to 1	1	.50	
Blue Grass.....	14	243,000	0 to 1	1 to 1	1 to 1	2	.57	
Rough stalk weed.....	14	217,000	0 to 1	1 to 1	1 to 1	2	.72	
Yellow oat.....	5 1/2	118,000	0 to 1	1 to 1	1 to 1	2	.....
Bent grass.....	14	10,000	0 to 1	1 to 1	1 to 1	2	.....
Red clover.....	60	16,000	0 to 1	1 to 1	1 to 1	2	.....
Perennial clover.....	60	16,000	0 to 1	1 to 1	1 to 1	2	.....
White clover.....	60	32,000	0 to 1	1 to 1	1 to 1	1 1/2	.....
Lucerne.....	60	12,000	1 to 1	1 to 1	1 to 1	4	.....

By inspecting the above table we are convinced that a very large amount of seed is annually lost to the farmers (which are very expensive in value) by being too deeply covered. We have formed a combination from the table of twelve varieties of seeds and reduced the amount to ascertain the number of plants they would produce per square foot surface soil providing all would grow. As we wish to make a report which can be a reliable guide to the farmers in this state: Thirty pounds of mixed grass seed will produce 1,872 plants per square foot, and eighteen per square inch. Eighteen pounds will produce 1,152 plants per

square foot, and eight per square inch. Fifteen pounds will produce 1,005 per square foot, and six per square inch upon new plowed land. A less quantity will be required upon cultivated grass land. A large difference in favor of lighter seeding than which is recommended by our agricultural writers and experimenters, who recommend as high as fifty pounds of mixed grass seed per acre. If it is a possible thing to change your meadow for pasture use so as to allow the young grass plants time to become well established, and mowing the pasture lot instead of the meadow lot for one or two seasons, then you will secure one of the very best pasture lots in this state for the production of good succulent food ration during the grazing season if we get our usual amount of rainfall. Seeding of grass land can be done as soon as the frost leaves the the surface of the land in the spring. Cultivate, and sow seed till the first of June. I refer to the meadow lands. Pastures should be seeded earlier. We do not sow any grass seed with the small grain, only clover for fertilizers in the spring season. We seed the stubble land without plowing in the month of August, if favorable conditions will admit. On good condition of soil we get two tons of excellent hay the following season per acre. If you change an old pasture lot to a meadow, cultivate in the early part of August, if you can also change the stock. Hundreds of acres of land were cultivated and seeded in this state during the past autumn which will be mowed this season. Sow grass seed till about the 1st of October. Suspend sowing until the temperature of the soil is so low or cold that grass seed will not germinate, then scatter the seed and let them grow in the following spring if the land does not overflow so as to disturb the seed. The varieties adapted to the various soils we classify in the division of our topic. The foregoing remarks will forcibly apply to all classes of soils in this state except the sandy section which comprises about 4,000 square miles, which we will now review:

SANDY SOILS.

The quantity of heat which a soil will receive, retain or throw off in a given time, depends upon the conducting power which it possesses, as the following table will demonstrate, the temperature of the atmosphere being at 70°:

COOLING.

	°	h.
Calcareous sand	100.0	3 30
Silicious sand.....	95.6	3 27
Sandy clay.....	76.9	2 41
Gypsum	73.2	2 34
Stiffish clay.....	71.1	2 30
Stiff clay	68.4	2 24
Piser clay.....	66.7	2 19
Calcareous	61.4	2 10
Humanus.....	40.0	1 43

This table of experiments teaches the farmer the importance of seeding his grass land so as to overcome the influence of the heat, which increases the evaporation of the moisture which the soil contains. Also arrests the carrying off of valuable properties which are required for the growth of the plant. To accomplish this object, sow the varieties whose roots penetrate deeply into the lower stratum of the soil; also producing a heavy shade to the surface of the soil. To illustrate this position, look at the growth of the clover plants and many others, as the *cow-pra-lucerne*, also the *deep grasses*. Clover grows with a strong, vigorous power, striking the roots deep into the ground, and the drawing up from the soil vegetable elements of plant food, and as the clover grows it *shades the surface of the land*, keeping it moist and cool. As a consequence the ammonia which is floating in the air descends by the cooling of the night shade to the earth, and as it is received and commingled among the clover and is drawn to the surface of the soil, the land absorbs it, and thus it is available plant food. This position is very clearly demonstrated by the following experiment, viz.:

In a field of clover sown the spring of the preceding year several plants as like one another as possible were selected

and chosen. The earth adhering to the roots was removed by careful washing under a small stream of water, the plants were then made dry between leaves of blotting paper exposed a few hours in the air. Three (3) of the plants were preserved for analysis, weighed when green 104.20 grains, troy, three (3) other plants weighing 105.28 grains troy, were set in sand recently calcused (selected to kill plant food) and moistened by distilled water (which had been boiled). The transplanting took place on the 28th of May and the plants were forthwith protected from dust, for some days they seemed to languish, but by and by they became remarkably vigorous. In a month the clover had grown to twice (2) its original height and the leaves were of the most beautiful green. The plants had in all respects as fine an appearance as the clover which had been left growing in the field. The flowers showed themselves upon the 8th of July and by the 15th the flowering was complete. An end was put to the experiment on the first of August.

RESULT OF THE ANALYSIS.

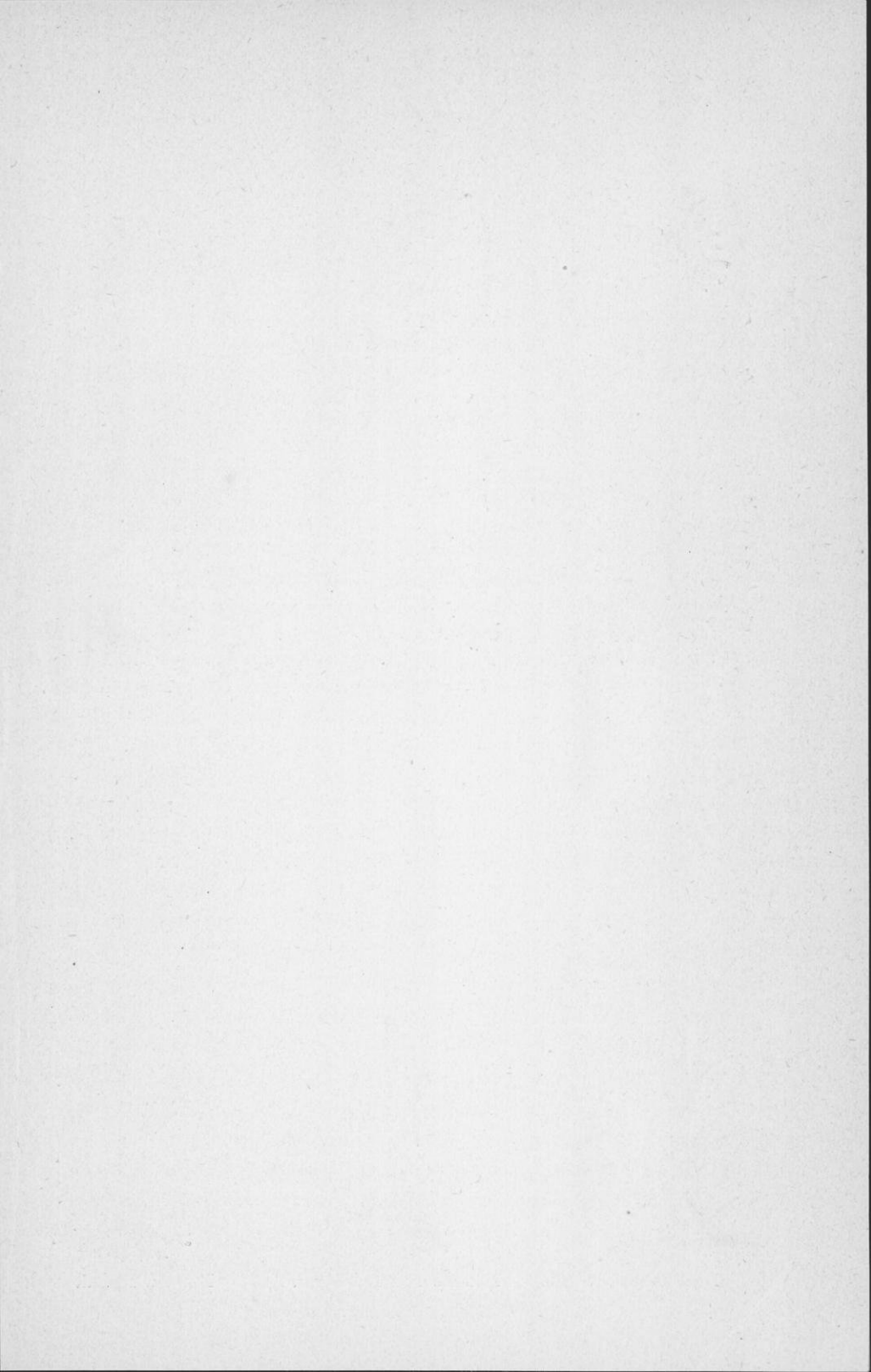
	<i>Before culture.</i>	<i>After culture.</i>
Carbon.....	43.42 parts.	53.00 parts
Hydrogen.....	5.40 parts	6.51 parts
Nitrogen.....	3.75 parts	2.45 parts
Oxygen.....	47.43 parts	38.14 parts
	100.00	100.00

RESULTS.

The clover transplanted weighed when dry and free from ashes.....	13.64
After sixty-three days culture on barren soil weighed.....	34.96
Gained during culture.....	21.32

	C.	H.	O.	N.
Plant contained before culture.....	1.92	0.74	6.46	0.50
Plants contained after culture.....	13.52	2.23	13.32	8.64
	+12.60	+1.40	+6.86	+0.35

Thus in two months growth at the cost of air and water the clover has so to say tripled its quantity of organic matter and the weight of the ammonia contained in it, was very nearly doubled. *Brussing Culture Chemistry Applied to Agriculture, Page 47.*

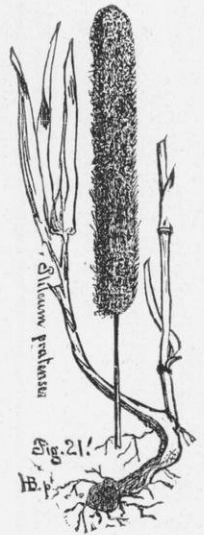




Sheep Fescue.



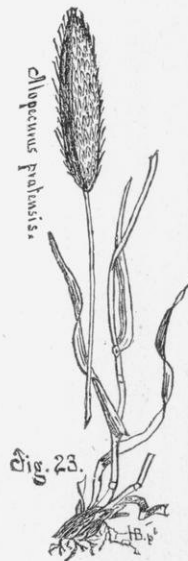
Fowl Meadow Grass.



Timothy Grass.



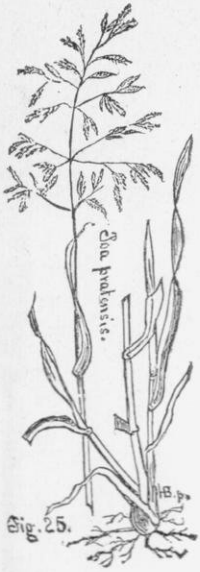
Hard Fescue.



Meadow Fox Tail Grass.

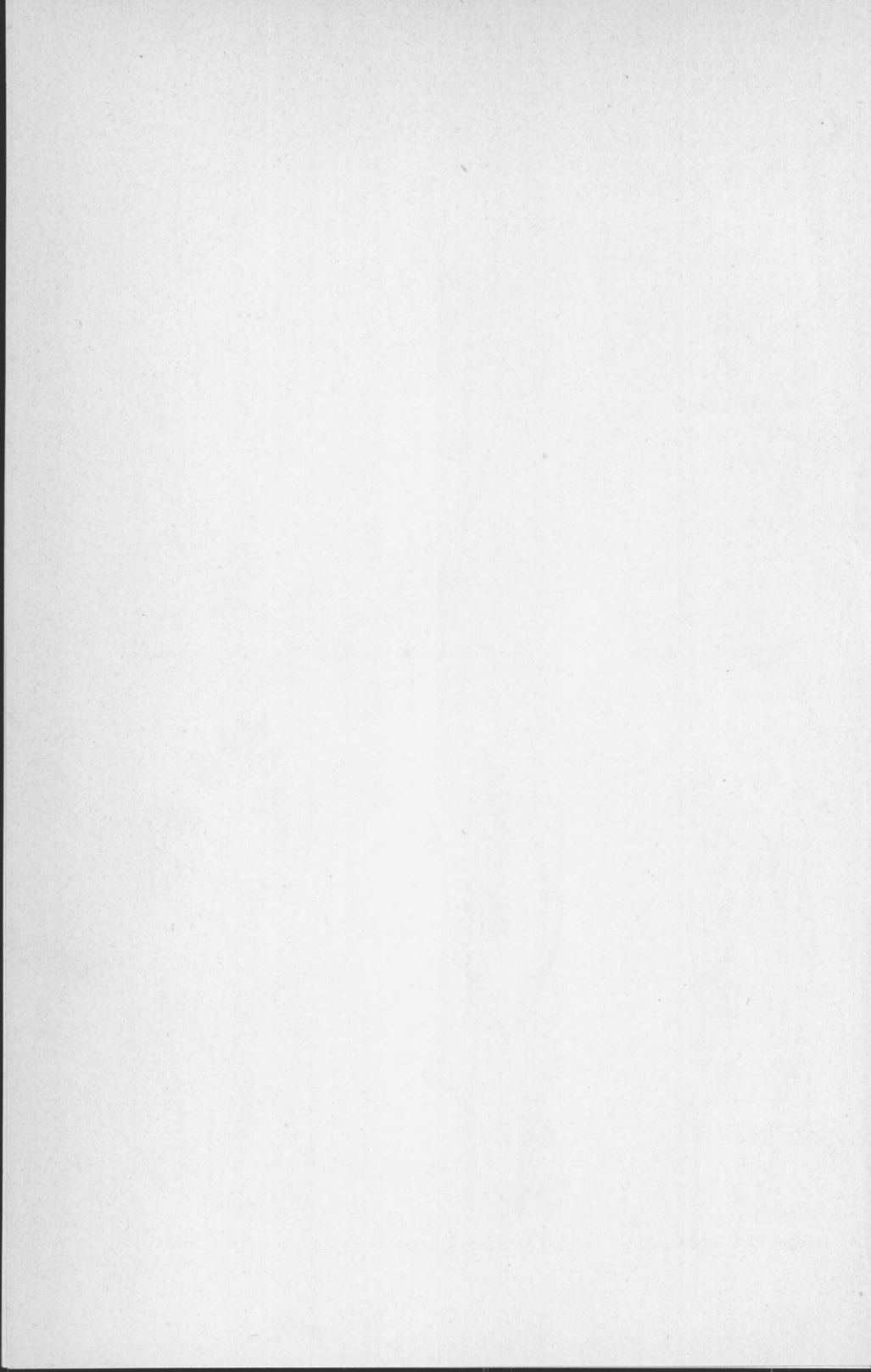


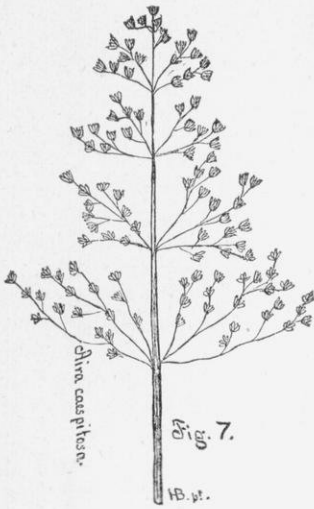
Meadow Fescue.



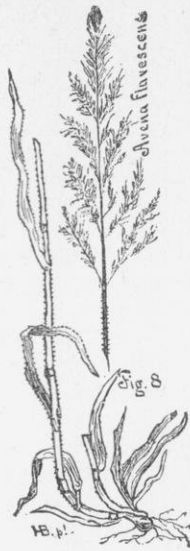
Kentucky Blue Grass, or June Grass.







Haddock Grass.



Yellow Oat Grass.



Wood Meadow Grass.



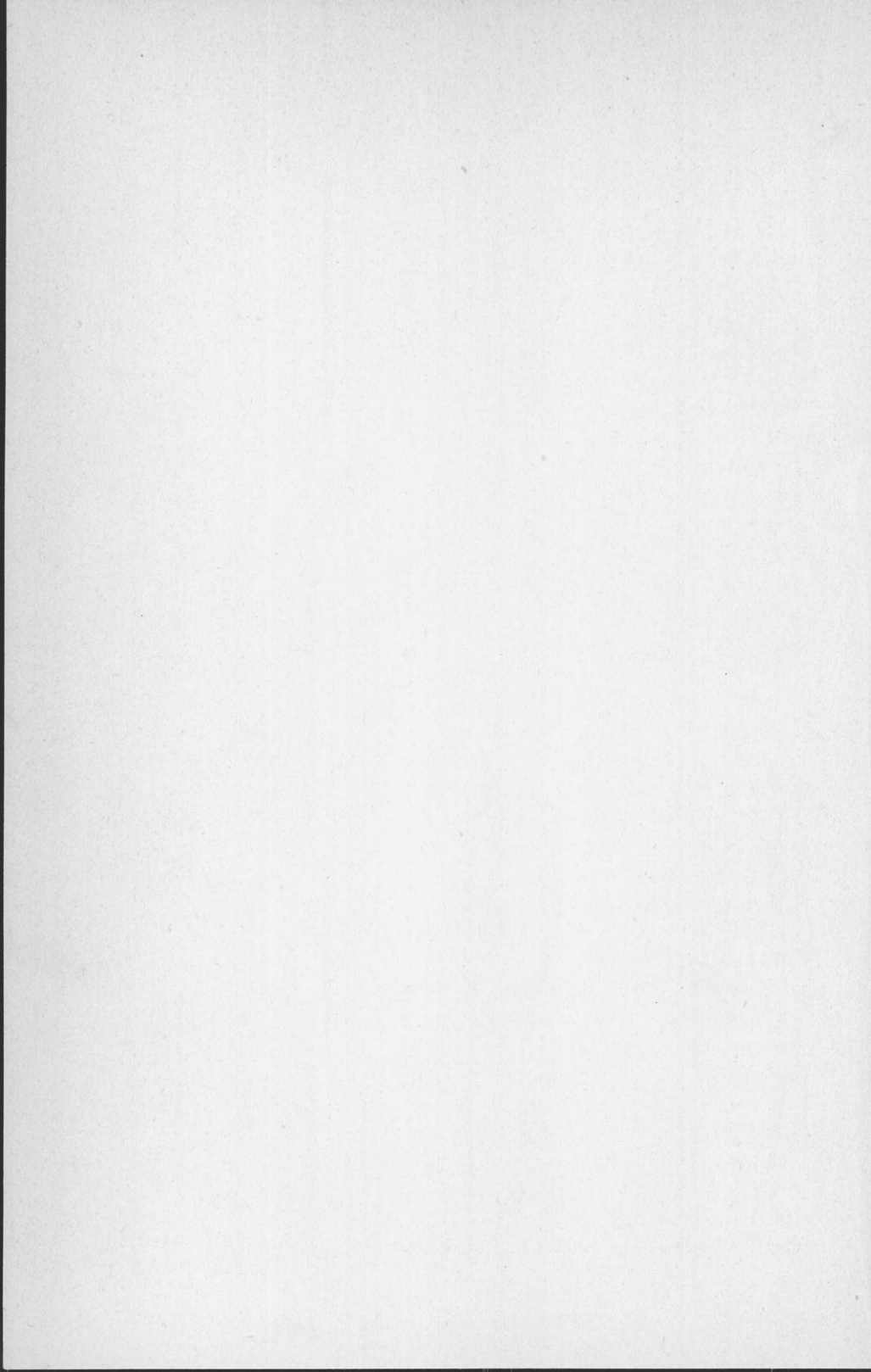
Italian Rye Grass.



Crested Dog's Tail Grass.



Orchard Grass.



Can we secure a good seeding of grasses on the exhausted soil by cereal castings on the sandy land belt of this state? We answer, yes. If the experiments of J. Boussingault, which we have given be correct and true, then we cannot doubt the ultimate success of the practical work which can be accomplished with this class of soil. It must be remembered that the soil for this test was composed of pure sand and heated so as to destroy all plant food which it contained, and protected from receiving support from the dust. Also the water which was used to moisten the plants was boiled for the object of destroying all vegetable nutriment. Please to note gain of the different elements of plant food during this period of trial: Carbon, 12.60 parts; hydrogen, 1.49 parts; nitrogen, 0.35 parts; oxygen, 6.86 parts, which was produced by the influence of air and distilled water alone without the aid of any attendant elements. Hence this is very conclusive evidence that these plants receive all of their support from water and air alone. Again this position has been demonstrated by the cultivation of the *Cow Pra* (scanfoin), another variety of the singumuns (or pod bearing) family which will grow on our poorest sandy soils. (We have specimens of this plant in our collection.) Again, we would call your attention to the improvement of the sandy belt in the state of New York which is very similar in the formation of soil and the varieties of timber growing thereon compared as to the condition of the sandy land belt in this state. The market value of the sandy lands of New York has increased 25 per cent. more than the other class soils during the past ten years. Notable instances in our own state can be mentioned, viz.: Waupaca, Marquette, Juneau, Waushara, Adams and Portage counties, and other sections of sandy soil in this state are demonstrating the value of the clovers for a fertilizer for this class of soil, thus increasing its productive value.

In order to be more fully understood we submit the following suggestions, which we would recommend, to-wit: Sow clover with rye on cultivated land in the fall before the 20th of September. Cover one inch deep, with light har-

row, finish with a plank slick which packs and smooths the surface of the soil, which will increase the per cent. of the seed sown to germinate and grow, which is lost by too deep covering of the seed by former methods. The amount of seed sown per acre should be a sufficient quantity to produce heavy shade to the surface of the soil, in order to decrease the influence of the penetrating rays of the sun which cause an excessive evaporation of the moisture which the soil contains that is required for the growth of the plant. Also this excessive heat changes the chemical condition of one of the fundamental principles of plant food, *i. e.*, *ammonia*. To counteract the influence of this excessive heat we recommend the sowing of gypsum or land plaster at the rate of 100 pounds per acre at the seeding. That will produce the following results: "1st. The principal elements of *gypsum* are sulphuric acid 59.00 parts; lime, 33.00 parts; accessories, 13.00 parts. 2nd. The sulphuric acid of *gypsum* having an affinity for the ammonia keeps hold and enables it to become incorporated with the soil to become plant food. 3rd. All vegetable matter while decaying generates ammonia and it being an exceedingly volatile substance (its weight only .59 of common air), it becomes vaporized at 80° and consequently lost to the soil, but by the decrease of the temperature of the atmosphere the *ammonia* is condensed with moisture brought down to the earth by the dews and rains; the *gypsum* being mixed with the surface of the land acts to hold and incorporate it with the soil whereby it becomes *fixed* for plant food." Leibig Organic Chemistry applied to Agriculture, page 86.

The conclusion from deduced experiments and practical observations is that the value of *gypsum* sown upon this class of soil has been and is yet underestimated as an auxiliary adjunct for renovating all classes of land which are brought to a high temperature by the heat of the sun, also restoring to a vestal condition. We will now return to our field of clover. We would not cut the first crop of grass, but leave it for *mulching*. The value and benefit it yields in assisting in the formation of a covering to the surface soil can

not be overestimated as an attendant element to assist in promoting a rapid growth of the growing clover plant. The following year we sow the following mixture of grasses, Orchard Tall Fescue, Sheep Fescue, English Blue grass, Lucerne, sike clover. Sow early in the spring, harrow lightly, roll with a heavy roller, also sow one hundred pounds of gypsum per acre. This combination or mixture will yield a large amount of roots which will produce a large amount of plant food when they decay. By this treatment the soil soon becomes in a condition for the production of any cultivated crop. This field can be used for the growing of corn, potatoes or small grain, also it will yield a crop of hay. Even it can be used for pasture. Remember not to feed too closely in the fall. We now inspect the condition of the soil which has been cultivated to cereal crop. We find the first stratum to be composed of vegetable mould to the depth of from one to two inches, formed by the grasses and other classes of vegetation, pressed down by the snows to decay, and leaving the surface of the soil covered by the *mulching* which is produced by its decomposition, and now it becomes a very important agent in absorbing and retaining the "*ammonia* which is brought down by the rains and dews, which has become *mixed with the soil continually increasing the depth of its fertility.*" Boussegault, page 344.

Therefore, the frequent burning over the surface of the land not only burns leaves and grasses but destroys the vegetable mould exposing the surface of the soil to the penetrating ray of heat of the sun, thus impoverishing its fertility. Therefore, this practice of treatment of these lands is *suicidal* to the financial interest of their owners. We will now note the list of grasses which we would recommend for a permanent pasture, also the manner of cultivation. 1st. The surface of the soil should be cultivated to the depth of one inch, making a good seed bed. Do the work soon as the frost leaves the surface soil. Sow the following mixed grasses, viz.: Medium and Menothican Alsike clovers, Lucerne, Tall Fescue, Sheep Fescue, Ky. Blue grass, English Blue grass, Orchard grass. Combine this mixture so that it will average about 15 lbs. per acre, adding 100 lbs.

gypsum per 15 lbs. of the mixture of seeds. Cover seed with a light harrow. Work lightly; finish with a *heavy roller*, sowing the land plaster after the roller has passed over the surface of the soil. Use the clovers in the mixture for a base or the largest proportion. Do not clover this land to be used for grazing the first season. If the cultivation and seeding should be done continue to sow the seed as soon as the condition of the weather will allow. If you can do the seeding the latter part of *August*, it will give a larger growth to the plants. Remember that frequent showers are very essential to insure a good standing of plants on this class of soil. Meadow lands should be treated in like manner as the pasture land on this class of soil. At this time we think it would be timely to introduce the value of the clover roots for plant food, which is given by undoubted authority, viz.: Carbon, 43.4 parts, 15 lbs. per acre; hydrogen, 5.3 parts, 75 lbs. per acre; oxygen, 39.9 parts, 5.23 lbs. per acre; nitrogen, 1.8 parts, 26 lbs. per acre; salts and earth, 12.6 parts, 1.78 lbs. per acre. From 2,292 lbs. of clover taken from a field there was left 1,883 lbs. of residue in the soil, which demonstrates the vast importance of the use of clovers in fertilization of our *exhausted soils*.

DESCRIPTIVE AND ANALYTICAL VALUE.

With the aid of chemistry we note the following fact, viz.: It shows the component factors which forms its structure; also the value of each factor when it is combined for a food ration, to-wit., starch, sugar, gum and fat, which enter into the composition of food ration. Therefore, it is of vast importance for the farmer to know what the constituent elements are; also their value in the products of *butter, cheese, beef, mutton of the highest market value at the least expense of production*. Therefore, cultivate a mixture of grasses which will form a *natural food ration* requisite for animal support. That you may readily decide what grasses produce this result, we introduce the list showing their analytical values, viz.:

Red Top— This variety of grass is very generally known to the mass of farmers in this state. Therefore, to renew its

history, it would be the "love of labor lost." Flowers about the middle of July, fibrous and creeping roots. According to the Worburn experiment, it yielded at the time of flowering 10.209 pounds of grass, which lost in drying 5.615 pounds, and afforded 532 pounds of nutritive matter. At the time of seed-ripening, it yielded 9.528 pounds of grass, which lost exactly half of its weight in drying, and only afforded 251 pounds of nutritive matter per acre. It is greatly to be regretted that Mr. Way has given us no analysis of it. We know of no other analysis except made by Prof. Emmons, at Albany, N. Y., for the purpose of determining its mineral constituents.

Agrostis albe, bent top, flower in July and August, roots fibrous and riny, growing on most land in this state. It can be propagated by sowing the seed or planting the chopped, riny roots. Mr. Sinclair says, that when grown on good soil, it produced at the time of flowering at the rate of 17.696 pounds of grass per acre, which lost in drying 9.954 pounds, and yielded of nutritive matter about 968 pounds, while at the time of ripening its seed, it produced 19.057 pounds of grass, which lost in drying 10.481 pounds, and afforded 1.042 pounds of nutritive matter. It further produced 2.722 pounds of green aftermath, and a portion left uncut till December afforded at the rate of 20.418 pounds of grass, which yielded of nutritive matter about 1.436 pounds per acre. This variety will grow on the peaty formation of soil, when properly drained, good for meadow and pasturage. Specimens selected in Rock county.

Daatylis glamerato Orchard Grass. This species is one of the most valuable grasses grown in the state for pasture use, as it withstood the severe drouth during the two past seasons (1886 and 1887), exceedingly well. Maintaining a strong, vigorous growth, for the reason that it sods deeply into the lower stratum of the soil. It should be fed closely by the grazing stock as it is a tussock grass, also a very rapid grower, throwing out root leaves in numerous numbers. Flowers in May and June, fibrous root. It will grow in all classes of soil in this state when properly dressed which are in use for agricultural purposes, but it will differ in its agri-

cultural value. According to the analysis of Mr. Way it contained water 70 per cent., of albuminous or flesh forming principle 4.06 per cent., of fatty matter 0.94 per cent., of heat producing principles 4.06 per cent., of woody fiber 10.11 per cent., of ash 1.59 per cent. According to the Woburn experiments this grass grown upon a peaty soil yield one-sixth more in weight than on rich sandy loam, but the produce was of inferior value. On the latter, the grass when cut on April 15, weighed at the rate of about 10.209 pounds per acre, which afforded about 1,190 pounds of nutritive extract. At the period of flowering the green was equivalent to 27,905½ pounds, which lost in drying nearly 16,045 pounds, and produced only 1,089 pounds of nutritive extract. At the period of ripening its seed, a reduction in weight equal to 1,361 pounds per acre had taken place, which yielded an increase in dry hay at the rate of 1,413 pounds, and in nutritive extract of about 363 pounds. Therefore it will be seen by the different experiments that the greatest value of the grass is to feed it closely when it is in a green condition. Specimens selected from various sections of this state.

Phlewm pratense. Catstail, Timothy, Herd's grass (in New England). All farmers are familiar with this grass, therefore will only notice its value as compared with the other varieties. Flowers in early July, fruits in August, bulbous root. According to Mr. Way's analysis, timothy contains water 57.21, of albuminous or flesh forming principles 4.86, fatty matters 1.50, heat producing principles (starch, gum, sugar, etc.) 22.85, wood fibre 11.32, mineral matter 2.66. We deem it not necessary to give the experiment of this grass as we wish to be as brief as we can and make our statements plain to the readers of this article.

Arrhenatherum avenacrum. Tall oat grass. This specie is commanding a large amount of attention in this state by the practical and progressive farmers. Timothy will meet its rival in this species of grass, as the grass will grow side by side in the same class of soils. Flowers in May and June roots perennial and fibrous, which excells timothy in this respect. According to the analysis of Mr. Way, it consists of water, 72.65; proteine, 3.54; fat, 0.4; heat producing

matters, 11.21; woody fibre, 15.4; ash, 2.1. The produce of an acre of clay land at Worburn was 17.015 pounds, which lost 11.635 pounds in drying, and yielded 664 pounds of nutritive extract. At the time of ripening the produce was 16.335 pounds, which lost in drying 10.617 pounds and yielded 222 pounds of nutritive extract. The weight of the rowen was 13.612 pounds, which yielded 265 pounds of nutritive matter. The foregoing experiments demonstrated the value of grass for meadow or pasture use. Specimens selected in Jefferson County, Wis.

Festuca elation. Taller fescue. This species is natural to the soils of this state. It will be found in different soils although it will obtain a larger growth in moist soils. Cattle are very fond of it in a green or cured condition. Flowers in June, roots perennial fibrous; hence a good pasture grass. Messrs. Scheven and Bitthuson found it to contain 74.8 of water, 2.4 of aluminus matters, 0.8 of fat, 10.2 of heat producing principles, 10.1 of wood fibre and 1.7 of ash. The Worburn experiments gave 54.450 pounds of this per acre at the time of flowering, which lost in drying, 30.628 pounds and gave 4.25 pounds of nutritive matter. When this variety of grass is cultivated for hay it should be mixed in a combination for early cutting. Specimens selected from various sections of this state.

Festuca pratensis. This valuable variety of this tribe of grass is growing in many sections of this state; also giving general satisfaction. It is a very vigorous grower, yielding a large amount of forage during the entire season for its growth, which makes it an excellent grass for pasture use. Flowers in July. Roots fibrous. According to Mr. Way's analysis it contains water, 75.3; of albuminous matter, 3.4; of fats, 0.7; of heat producing principles, 11.5; of woody fiber, 9.3; and of ash 1.6. We are unable to report the yield per acre of this valuable grass at the present time of writing. Specimens selected from various sections of this state.

Festuca ovina (Sheep fescue). This variety is naturally adapted to sandy soil, growing in low tufts. It will thrive in the sandy belt of this state. It does not appear to thrive

on rich soil. Stock are very fond of it. Flowers in June and July. Roots perennial and fibrous. This grass is only for pasture use. At the grass garden, at Woburn, on light, sandy soil, it produced at the time of flowering, at the rate of 5.445 pounds to the acre, which yielded 212 pounds of nutritive extract. At the ripening of the seeds the produce was 5.445 pounds which gave 127 pounds of nutritive extract. The aftermath yielded 3.403 pounds of hay, which left sixty-six pounds of nutritive extract. It will be noticed that although this is a dwarf grass that it is very nutritious in proportion to the amount of forage it produced.

SPECIMEN SELECTED IN THIS STATE.

Festuca durinsenla. Evergreen. Meadow fescue. Domestic or English Blue grass. All of these names refer to the same variety. This species has been growing in Jefferson county in this state during the past twenty years continually, on the same farm. This may be classed among our most valuable grasses to cultivate in this state, for the reason of its deep-rooting and withstanding the iron drouth, also producing a very large amount of forage, throwing out numerous long, narrow leaves at the base of its culms or stems. Like the Orchard grass it grows in hillocks or bunches. It flowers in June. Root fibrous, very numerous, penetrating very deeply into the lower stratum of the soil. Will grow on almost all classes of soil except too low land. The seed of this species is now known as the English Blue grass. A large amount of seed was sown in this state during the past season. We selected a specimen from seeding which was sown about the first of August, selection made about the last of October, specimen measured six inches in height. We have an analysis of this variety of this grass by Mr. Way, which gives water, 69.33; nitrogeneous matter, or proteine, 3.70; fat, 1.02; heat producing principles, 12.46; woody fibre, 11.83; ash, 1.66. According to Mr. Sinclair's experiments an acre of clayey, loam soil well manured produced 18,375 pounds of grass, which loses 10,481 pounds in drying, and yielded 1.004 pound of nutritive extract. When

the seed was ripe the product was 19,057 pounds, which lost 10,481 pounds in drying, yielded 446 pounds of nutritive extract. The product of the aftermath was 10,200 pounds, which yielded 199 pounds of nutritive extract. From these results it would seem that this variety is much more valuable than any of the narrow-rowed leaved fescues, and the conclusion seems to harmonize very well with practical experience. Specimens selected in Jefferson county.

Festuca rubra. Red Fescue. This variety is being introduced into this state in many of the mixtures which are being used in the improvement of the pasture land. It flowers in June and July; roots fibrous; culms about eighteen inches in height; well adapted for pasture.

Fescue grass. The name is said to be derived from the Celtic word *fess*, signifying food or pasturage. Specimen selected in Dodge county, Wis.

We now introduce the tribe of Paas and the varieties which are growing in the various sections of the state.

Paa. Meadow grass, spear grass. A current Greek name for grass or pasture.

Paa pratensis. Kentucky Blue grass. Our common June grass, which is *cursed* by many farmers in the northern states as being almost an unpardonable nuisance and pest on the farm. The value of this grass to the farmers of this state cannot be over estimated for the richness of the herbage which it yields to the grazing stock, although it is always accompanied by other members of its tribe equal in value, as the analytical report will demonstrate. This grass is also known as *Green grass*, *Smooth-Stalked Meadow grass*. It flowers in the latter part of May; root, creeping. It is indigenous in all the northern states, and chiefly affects calcenous soils. This is one of the widest diffused grasses in the world. We have had ample opportunities for observing it, and yet we can come to no conclusion upon its merits. Some things about it are admitted by all:

1. It enters into the composition of our best meadows and pastures in *Europe* and *America*.
2. The famous pastures of Kentucky which fatten animals faster than any other in the known world are filled with this grass.
3. The fine

meadow pastures of Vermont, on the western slope of the Green Mountains contain a very large proportion (at a least two-thirds) of it. 4. Wherever the sweetest and the *keeping butter* is made this grass will occupy a conspicuous place in the pasture; the best *cannot* where this is wholly missing in the pasture. 5. Although some grasses start earlier in the spring, yet it affords a good bite much earlier than most species. 6. There is no grass known that bears the extreme cold as well as this, even as far north as Vermont. After being exposed to the cold and snows all winter it is eaten greedily by the cattle in the spring, and they are found to thrive upon it. Sheep and even horses will paw away the snow in winter and eat the grass beneath with great avidity. 7. It only sends up one flowering culm in a season, and these stand far apart, hence, the first cutting, the burthen of hay is less than that afforded by several other species, but in August there is a great growth of root leaves which gives a heavy bulk at the second cutting; the rowen which is more abundant than any other, fully makes up for the deficiency of the first crop. 8. It succeeds in light lands where fibrous rooted grasses would fail. 9. Its nutritive properties as given by Mr. Way are as follows:

In one hundred pounds of grass there are 67.14 pounds of water, 3.41 pounds of albuminous or flesh forming principles, 0.86 pounds of fatty matter, 14.15 pounds of heat producing principles, such as starch, sugar, gum, etc.; 12.49 pounds of woody fibre and 1.8 pounds of ash. 10. According to the analysis of Scheven and Ritthusen, gave for 100 pounds of *pac prantensis*: water, 62 pounds, 4 pounds of flesh forming principles, 1.1 pounds of fatty matters, 15.4 pounds of heat producing principles, 15.6 pounds of woody fibre and 1.8 pounds of ash. 11. The Worburn experiments show the production of an acre to be 10,209 pounds, which lost 7,337 pounds in drying and gave 279 pounds of nutritive matter. When the seed was ripe it yielded 8,507 pounds to the acre, which lost 5,104 pounds in drying and gave 199 pounds of nutritive matter. The produce of the aftermath was 4,083 pounds to the acre and yielded 111 pounds of nutritive matter. We have in our herbarium specimens of

this grass grown from a sod which was forwarded from Paris, Ky., which was transplanted and cultivated in a garden at Whitewater, in this state. The specimen can be distinguished from those selected from various sections of this state. None of the grasses surpass it in the beauty of its form and the gracefulness of its movements. Nowhere can we find more fairy-like delicacy of structure and contour, more graceful curves of motion or greater softness and purity of color than in the expanded panicle of *paa prantensis*.

Paa compressa. Wire grass, Blue grass. This variety has a flat culm or stem, the leaves are of deep green with bluish tinge, hence called the *blue grass* proper. It grows on most all classes of soils in the state. It flowers in June and July, perennial roots, creeping and fibrous. This grass forms one of the mixture in our very best meadow and pastures in this state and its value is accredited to the merits of the *June grass* or *Kentucky Blue grass* which is claimed to be the most valuable grass to the farmers of this state who are engaged in the vocation of mixed stock husbandry. It is certain that cows that feed upon it both in pasture and in hay give more milk and keep in better condition than fed on any other grass. Horses fed on this hay will do as well as when fed on *timothy hay* and *oats* combined. This has been verified abundantly. Sheep fatten astonishingly when fed upon it and all grazing stock eat it with great avidity. It keeps green and succulent after the seeds are ripe even until the heavy frost of winter. It loses less weight in drying than other species. We have no analysis of the grass by English, German or American chemists which is very greatly to be regretted. The Worburn experiment gives following results: The produce per acre when it flowers is 3,403 pounds, which loses 1,959 pounds by drying, which yielded 265 pounds of nutritive matter. At the time the seeds were ripened it gave 4,093 pounds to the acre which lost 2,041 pounds in drying and gave 315 pounds of nutritive matter. Mr. Sinclair described a variety of this species under the name of *paa erecta*. We see here exactly what he describes, but it does not differ enough from the standard species to separ-

ate it under a distinct name. It is simply the form of the *paa compressa* assumes upon the soil most favorable to its growth.

The result of Mr. Sinclair's experiments upon this form of the grass were more favorable; the product per acre when in flower was 15,654 pounds, which lost 9,001 pounds in drying and gave 743 pounds of nutritive matter. When the seed was ripe the grass weighed 14,983 pounds, which lost 6,738 pounds by drying, and gave 1,169 pounds of nutritive matter. The aftermath yielded 4,764 pounds, which gave 111 pounds of nutritive matter. Specimens selected from various sections of the state as this is a very common species of grass.

Paa aunna. Low spear grass. Annual meadow grass. Suffolk grass. This species is also a valuable adjunct to our pastures which are noted for the rich nutritive grasses which they contain. This is only adapted for pasture grass, as the culms or stems are only from three to eight inches in height. This specie is found growing in all of the old grass lands. Flowers from April to October. Roots fibrous. Its size is too diminutive for the hay crop but as a pasture grass it is greatly relished by cattle and as far as it goes it is very nutritious and gives forth young bite from spring to fall. This grass resembles our common *June grass* in its verutum. Mr. Way analyzed this grass in flower and also as dry hay with the following result: Water, 79.14 per cent. Sweet scented vernal and Meadow fox-tail exceeded it in this respect, the former by 1.21 and the latter by 1.16 per cent. Albuminous, or flesh forming principle, 2.47 per cent. Only Thalam rye grass, Soft brown and Meadow fox-tail contain a less amount of the matter. Fatty matter, 0.71 per cent. Annual rye grass, Soft brown, Meadow fox-tail, Sweet scented vernal were the only grasses which contained a less amount of fatty matter. Of heat producing principles it contained 10.79 per cent. *Paa trovialis*, *Browns molis*, Sweet scented vernal and Meadow fox-tail, are the only grasses inferior to it in this principle. Woody fibre, 6.30 per cent. It contained less of this substance than any other grasses on the list. Of ash, 0.59 per cent. It also shows less mineral

matter than any other. When this grass was dried at a temperature of 212 degrees Fahrenheit it contained of albuminous matter, 11.83 per cent.; of fatty matter, 3.43 per cent.; of heat producing matter, 51.70 per cent.; of woody fibre, 30.22 per cent.; of mineral matters, 2.83 per cent.

The Woburn experiments gave 5,445 pounds of the grass the produce of an acre which was reduced to 1,905 pounds when dry; yielded 21½ pounds nutritive matter. Specimens selected from various sections of the state.

Poa serotina (False Red Top Fowl Meadow grass). This species may be found growing in many sections of this state. Adapted to the moist class of soil. This grass will grow on all marsh lands when drained. It is natural or indigenous to our low class of soils. For hay it will excel timothy in nutritive value. This grass is too well known to extend its description and merit. It flowers in June. Roots creeping, hence a good pasture grass. The growth of the *Poa serotina* at the grass garden at Woburn was at the rate of 15,654 pounds to the acre, at the time of flowering, which lost 9,000 pounds in drying, and gave 734 pounds of nutritive matter. At the time of ripening of the seed the produce of an acre weighed 14,973 pounds which lost by drying 6,738 pounds, and gave 1,164 pounds of nutritive matter, which is 436 pounds in excess of the nutritive matters given at the time of flowering, and shows that the former exceeds the latter in nutritive matter in the proportion of five (5) to three (3). The production of the aftermath or rowan was 4,764 pounds, which gave 111 pounds of nutritive extract. The proportioned value therefore which the grass of the aftermath bears at the time of flowering, is as three (3) to six (6), and to the grass at the time the seed is ripe as three (3) to ten (10). From these experiments it will convince the most skeptical men of its important value.

Poa Augustifolia. Tall Spear grass; it flowers in July; roots fibrous. This species resembles the *Poa compressa* in the formation of its panicles. This grass may be found growing on our low lands. The culms or stems are about three feet in height, bearing a small number of stem leaves, but throwing root leaves. All the report we can give is the

experience and observations of Way and James who have been feeding it to their stock in a dry condition. All join in speaking of its value, as their stock will eat it with great avidity and relish. Specimens selected in various sections of the state.

Paa alsodes, (do not know any English name). It flowers in May and June; roots fibrous; found on hillsides and in woods from New England through Wisconsin. It is well adapted for lawns and thick, shady places where but few other grasses will grow. This grass is one of the principal species growing in shady pastures, which is equal to orchard grass for that class of soil. According to the Woburn experiments there were at the time of flowering 9,188 pounds of grass on an acre, which lost in drying 5,283 pounds, and gave 574 pounds of nutritive matter. At the time the seeds were ripe the product of an acre was 4,764 pounds, which lost 2,858 pounds in drying, and gave 241 pounds of nutritive matter. Few grasses suffer by late cutting as much as this, the loss of nutritive matter being 332 pounds. Specimens selected in various sections of the state.

Paa trivialis. Rough Stalk Meadow grass. This species is found in most lands and shady places. It flowers in July, root, fibrous. Its appearance resembles that of the *Paa pratensis*, June grass, very much; but it may be readily distinguished from it by it coming into flower three or four weeks later by its rough stem and leaves, and being rough on both faces. Roots, fibrous, whereas the *Paa pratensis*, or June grass, the stem and leaves are smooth and the roots creeping. *Paa trivialis* mixes well, very well, with orchard grass in all shaded pastures; its produce is twice as great when mixed with other grasses, as it is when sown by itself. It luxuriates on drooping bank and is admirably adapted to thick shady parks, as it bears shade well and will stand tramping as well as *Paa aunna*. Mr. Way's analysis shows that *Paa trivialis* contains of albuminous or flesh forming principles, 2.58 per cent.; of fatty matter, 0.97 per cent.; of heat producing principles, 10.54 per cent.; of woody fibre, 10.11 per cent.; of mineral matter, 2.20 per cent. Messrs. Schevin and Rittlaissum gave somewhat dif-

ferent figures as the result of their analysis of this grass in Germany; they, like Mr. Way, made their analysis of this when the grass was in flower. Their results were as follows: albuminous, 2.3 per cent.; fatty matters, 0.8 per cent.; heat producing principles, 8.4 per cent.; woody fibre, 8.8 per cent.; mineral matter, 1.6 per cent. According to the Worburn experiments, the produce of this grass per acre, when in flower, was 7,486 pounds, which weighs when dry, 2,246 pounds, which gives just seventy per cent. of water. The nutritive matter extracted from it was 233 pounds. In the grass experimented on by Mr. Way, there was 73.60 per cent. of water, and in the German experiments there was 78 per cent. The produce when the seed was ripe was 4,764 pounds, which weighs 3,522 pounds when dry, and yielded 336 pounds of nutritive matter. It would appear from these experiments, that the hay made when the seed is ripe, contained 102 pounds more of nutritive matter than when it was in flower; and it is certain that *all animals* eat the hay cut in flower with much greater avidity and apparent relish. Few grasses are better relished by cattle, and spots in pastures where it grows are always found to be closely cropped which can be noted in many, *very many* of our old pasture lots in this state. Specimens selected in various sections of the state.

Poa nemoralis. Wood Meadow grass. This variety, its appearance resembles in the autumn *Poa serotina* or fowl meadow. The seed of this grass will be found among the list offered for sale by the principal dealers in the United States. It flowers in July, root fibrous, perennial. It will be found growing in rich moist lands, also in shady places. Cattle appear to relish it as they eat it with great avidity. We can not report its analytical value. Yet we believe it to be worthy of the attention and consideration of the farmers of this state. Specimens selected in Jefferson county, this state.

Bromus molis. Soft Morass grass. An ancient Greek name for a species of wild oat *pomos bromus* food. It flowers in June, root annual, fibrous. Found in wheat fields and by banks of streams not common. Many farmers think this

grass an intolerable nuisance, but there are others, as they yet form a small minority, who think it more valuable than an oat crop. We are inclined to believe that question of its value is worthy of being settled by more accurate experiments than have yet been made, and it is to be hoped that chemists and practical farmers will make them without delay. It has been analyzed by Scheven and Ritthunsen, and by Way. According to the former it contains 66.8 of water, 2.8 flesh forming albuminous matters, 5 of fatty matters, 12.7 of heat producing matters, 14.5 of woody fibre and 2.7 of ash. According to Mr. Way, 76.26 of water, 4.05 of flesh forming matters, 0.47 of fatty matters, 9.04 heat forming principles, 8.46 of woody fibre, and 1.36 of ash. These wide differences which can not be attributed to carelessness or want of skill, seems to point to very strong influence of the soil, climate and culture on the tissues of the plant which may lead to many very important practical results if perseveringly followed up.

According to the Worburn experiments, we note the following result: The production per acre from sandy loam was at the time of flowering, 10,890 pounds, which lost in drying, 5,445 pounds, afforded 510 pounds of nutritive matter. When the seed was ripe the produce was 2,723; which lost 681 pounds in drying and afforded thirty-one pounds of nutritive matter. It will be observed that the grass at Worburn lost 1,327 pounds more in drying than the German grass, and 2,895 pounds more than the grass upon which Mr. Way's experiments were made. If we assume that all the matters found by the German and English chemists were nutritive, we have 3,618 pounds of these matters in the former, 2,550, in the latter in 10,890 pounds of grass, the first being 3,108 pounds more, the latter being 2,550 pounds more than Mr. Lindon found, or if we deduct the woody fibre from these analyses, the German analysis gives 2,038 pounds of nutritive matter, and Mr. Way's analysis gives 1,624 pounds of nutritive matter in 10,890 pounds of grass. In this latter case the German experiments gave 1,528 pounds, and Mr. Way's experiments gives 1,114 pounds more nutritive matter than the Worburn experiment. The German gives 414



Fig. 29.



Fig. 30.

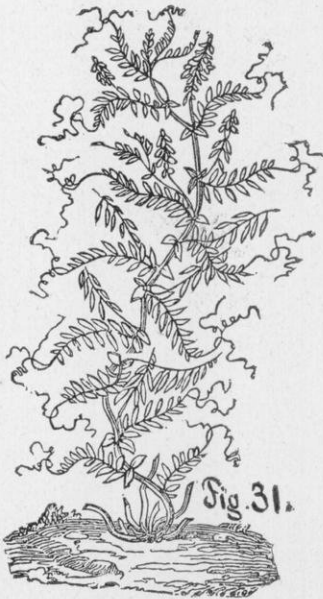
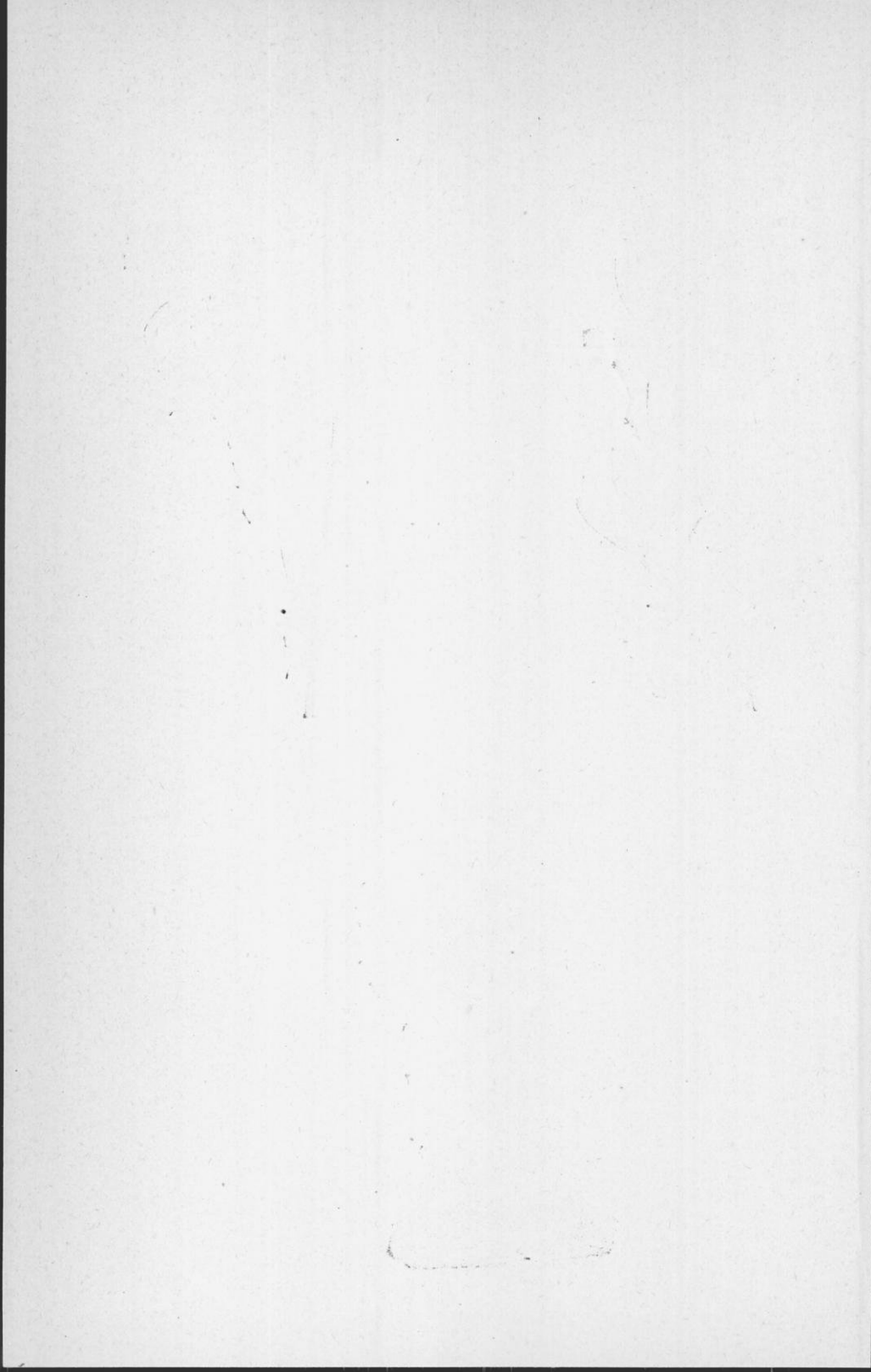


Fig. 31.



pounds more of nutritive matter than the English, but Mr. Way gives nearly twice as much of the valuable flesh forming principles, matter, than the German. Specimens selected in Dodge county, Wis. We have a full set of specimens of this tribe in our collection (cheat or Chess belongs to this tribe of grasses.)

Triticum repens. Couch grass, guetech grass, quack grass, dog grass, are the various names which are applied to this species of grass. It flowers from June to August. Rhizoma. creeping and penetrating deeply into the earth; perennial. It will be found in most all meadows and pastures northward. The farmers of the United States unite in one continuous howl of execration against this grass, and it seems strange when every man's hand is against it that it is not exterminated. The British farmer even surpasses his American brother in the heartiness of his maledictions on the quick (as he calls it). And yet we could never really satisfy ourselves that its presence in meadows and pastures was such an unmitigated curse. In lands where alternate husbandry is practiced, it must be admitted to be an evil of great magnitude. Its long, underground stems penetrate the ground in every direction. When broken up by the plow or spade, every fragment vegetates independently. It can only be eradicated with the utmost difficulty; its hardiness is so great and growth so rapid, that it will choke almost any crop which may be sown. It is claimed to be a very nutritious pasture grass, and in the absence of the analysis of this grass we very respectfully refer to the proprietor of the "Evergreen Farm," located in Spring Valley, Rock county, Wis., who is well experienced in the cultivation of this species of grass for pasture use. Specimens from various sections of this state.

Intacum ceninum. Much like the last in all respects, except that stems are longer than the palenco which are smooth. The most marked difference, however, is that roots are more fibrous. It is found in open woods and occasionally in fields from western New York to Wisconsin and northward, and grows well in shady places. We have an analysis of this grass by Messrs. Scheven and Ritthusen,

according to which it contains: water, 70.0; protein, 2.48; fat, 0.7; heat producing principles, 11.6; woody fibre, 12.7; ash, 2.1. According to the Worburn experiments the product of an acre on sandy loam at the time of flowering was 12,251 pounds, which lost 7,350 pounds in drying and afforded 478 pounds of nutritive matter, which exceeded the nutritive matter afforded by an acre of *T. repens* 96 pounds. At the time of ripening the seed the product was 10,890 pounds, which lost 4,628 pounds in drying and gave 340 pounds of nutritive matter. The product of the aftermath was 3,062 pounds, which gave 95 pounds of nutritive matter. English authors all give a very great preference to this over the *T. repens*. Specimens selected in Jefferson county, Wis.

Lolium parenne. Perennial Rye grass. English rye grass. This variety of grass has become very popular in many sections of this country with the German farmers. It will grow upon the same class of soil which will sustain the timothy plant. It flowers in June. It occupies the same place in *Great Britain* that the timothy does with us, and is esteemed on the whole higher than any other species of grass, and is called Rye or Rey grass; roots fibrous. The produce of the Percy rye grass was according to the Worburn experiment, on a rich brown loam at the time of flowering, 7,829 pounds of grass, 3,839 pounds of hay and 405 pounds of nutritive extract to the acre. The proportionate value which this grass at the time of flowering bore to that at the time the seed was ripening was at eleven (11) to ten (10) and to the aftermath at five (5) to two (2). According to Mr. Way's analysis, *Lolium parenne* consists of water 71.43, protein 3.37, fat 0.91, heat producing matter 12.08, woody fibre 10.6, ashes 2.15. Mr. Lindon gives the following advice which we are sure is of the greatest importance to all cultivators of the rye grass: "Attention should be paid to have the seeds of these grasses always supplied from their respective *original soils* or from *analogous soils* that *valuable* particles they possess may be perpetuated." Specimens selected in Jefferson county, Wis.

Lolium Italicum. Italian Rye grass. This variety re-

sembles the *Sperens* in form; however, the difference being an annual or at least a biennial root fibre. It flowers in June. It was this species grown last season near the city of Monroe, in this state, which was giving good satisfaction to the proprietor of the farm. This variety will grow on the same class of soil which will produce timothy; also upon our rich, moist meadows. The valuable qualities of this grass may be summed up as follows: Its habit of coming early to maturity as exemplified above, its rapid reproduction after cutting, its wonderful adaptiveness to all domestic animals which is shown by the extreme partiality they manifest for it, rather alone, or when mixed with other grasses, so either when used as green food for soiling, as hay or as pasturage in which latter state its stems are never allowed to ripen, and with or like those of other grasses. One of its greatest recommendations is its beneficial influence on the dairy, not only augmenting the flow of milk, but improving the flavor of the cheese and butter that are made from it. Its uncommon hardiness and capacity to withstand the vicissitudes of both *wetness* and *dryness*, the set-off to all these valuable qualities is that it is not a perennial, but if fresh seed is scattered over the meadow every second year and the surface of the ground scraped with a sharp harrow and then rolled, there will be a constant succession of crops. This grass will equal if not exceed the rapid growth of the orchard grass. According to Mr. Way's analysis, *Lohun Italicum* consists of water 75.61, proteine 2.45, fat 0.80, heat producing matter 14.11, woody fibre 4.82, ash 2.21. Please to note the small *amount* of woody fibre that this plant contains, being only 4.82 per cent. In conclusion we can not refrain from expressing the opinion that the introduction of *L. Italicum* into this very dry land in this state and irrigating it would be an unspeakable benefit to all concerned. Specimens selected in Jefferson county, Wis.

Cynosurus cristatus. Crested dogtail. This very valuable species of grass is being very rapidly introduced to the notice of the farmers of this state. It is naturally adapted to our wet meadows and peaty soils, after being drained. It flowers in July; root creeping; cattle are very fond of it.

Its seed is for sale by all large dealers of seeds in the northwest. We do not know its analytical value, nevertheless it is very highly recommended by all those men who have introduced it for their wet land seeding. Specimens selected in Jefferson county, Wisconsin.

Alopecurns pratenses. Meadow foxtail. It flowers in May, nearly four weeks in advance of timothy; root, fibrous. It is one of the earliest grasses to start in the spring. Pastures well covered with this grass will afford a full bite at least one week earlier than those which do not have it. It does not flourish well in dry soils, but likes moist soils. No grass bears a hot sun better, and it is not injured by frequent mowings, on which account, as well as for early verdure, it is valuable for lawns. Mr. Flint says in his work on grass, that it flourishes in the western part of Worcester county, Massachusetts, but it is nevertheless distributed there as a meadow grass, as it is very light in proportion to its bulk; it loses about seventy per cent. of its weight drying. It thrives best on rich land which is not too wet; low meadows and boggy grounds which have been drained are best suited for it.

It appears from the Washburn experiments that its product is nearly three-fourths ($\frac{3}{4}$) greater on clayey loam than on a sandy soil, and that quantity of nutritive matter is also greater in proportion as four (4) to two (2). Mr. Sinclair states that the proportional value in which the grass of the aftermath exceeds that of the flowering crop is as four (4) to three (3). It does not give a full crop until about the fourth year after the seed is sown, hence it is well adapted to alternate husbandry. This grass is grazers sheet anchor in the state of *Maine*. It is the principal grass in most of the rich natural pastures in Great Britain. Its limit of altitude is about 1500 feet above the level of the sea. It is found in Lapland, Norway, Sweden, Denmark, Russia, Holland, Germany, France, England and Italy, but is not a native of this country, having been introduced here from Europe. Mr. Way's analysis gives the following figures for Meadow foxtail: Water, 80.2 per cent.; albuminous or flesh giving principles, 2.44 per cent.; fatty matters, 0.52 per cent.; heat pro-

ducing principles, sugar, starch, gum, etc., 8.59 per cent.; woody fibre, 6.70 per cent.; mineral matter, 1.55 per cent. Its recommendations are, that it is found in abundance in some of our very best meadows. Here and in England it is very permanent and one of the first to start in the spring and first to mature its seed; it is exceedingly relished by cattle and may be pastured until quite late in spring, and if the cattle are withdrawn the seed culms will spring up and yield a crop of hay. Specimen grown and selected in Jefferson county, Wisconsin.

Authom or *authum oderatum*. Sweet scented vernal grass. Flowers in May and June. Root fibrous. It is found in meadows and woods in very dry soil, but comes to its greatest perfection in those that are deep and moist. In some of the meadows about Northampton on the Connecticut river, it constitutes the main bulk of the grass. Also near Philadelphia Penn. This species of grass is extensively cultivated, being claimed to give the noted aroma or flavor to the butter which is made in that section of the state. It is now also considered a very valuable variety for hay when grown alone as the culms are wide apart, and bear but few leaves, hence it gives a light crop of hay. A few stalks squeezed in the human hand for a little while will develop a powerful odor, resembling that of *gumbegom*, and was used for making a fragrant distille water 50 or 60 years ago. It gives the flavor to hay which is so much admired. It throws up flowering stems almost continuously throughout the season, producing a fragrance which can not be equalled by any other species of grass. We would recommend a light mixture of it in the seeding for meadow and pasture use. One of its traits in the character of this grass, is its early start in the spring, and its hardy and enduring character. In the Woburn experiments on a brown sandy loam well manured, the produce of one acre was at the time of showing, 7,823 pounds, which lost 5,723 pounds in drying and gave 122 pounds of nutritive matter. At the time the seed was ripe the produce from one acre was 6,125 pounds, which lost 4,287 pounds in drying and yields of 311 pounds of nutritive matter. The product of the aftermath was 6,806 pounds

which yielded little nutritive matter. Mr. Way gives the following account of its composition: Water, 80.25; protein, 2.05; fat, 0.8; heat producing principles, 8.54; woody fibre, 7.15; ash, 1.24. Specimens grown and selected in Walworth county, Wis.

Halcus tanatus. Velvet grass, Gorke fog, Meadow leaf grass. The whole plant is a light green and has an unmistakable velvety appearance. It flowers in June. Roots, fibrous. It grows in moist lands, but also flourishes in *dry sandy soils*. It abounds on the *sands* of Nantuckett and on the *sandy pastures* of the island of Rhode Island. Hence once it takes lodgment *in a sandy soil, it drives* out almost all other species, completing their banishment in two years. The only way to get rid of it is to enrich the soil, and when thoroughly done that is effectual. It seems to be that it is very easy of cultivation and very productive. The seeds weigh only about seven (7) pounds to the bushel, and it has been known to produce eighty (80) bushels to the acre. Sixty (60) bushels is quite a common production. From Mr. Way's analyses we learn that it contains: water, 69.70 per cent.; protein, 3.49 per cent.; fat, 1.02 per cent.; heat producing principles, 11.92 per cent.; woody fibre, 11.94 per cent.; ash, 4.93 per cent. According to Messrs. Scheven and Ritthausen, it contained: water, 75.1; protein, 2.3; fat, 0.5; heat producing principles, 9.5; woody fibre, 10.2, ash, 2.4. From the Woburn experiment we learn that the produce from an acre of clayey loam was 4,764 pounds about the middle of April, which yielded 167 pounds of nutritive matter. At the time of flowering the product was 19,057 pounds, which lost 12,246 pounds in drying and yielded 1,191 pounds of nutritive matter. At the time the seeds were ripe the grass weighed 19,057 pounds, which lost 15,246 pounds in drying and yielded 818 pounds of nutritive matter. The aftermath produced 6,806 pounds of grass and yielded 372 pounds of nutritive matter. Sir Humphrey Davy showed that the nutritive extract consists principally of mucilage and sugar, and that the nutritive extracts of the grasses most liked by cattle have either a saline or a sub acid taste. Since the taste of this extract is very much like that of gum arabic,

he suggests that this grass would be improved for the cattle by the sowing of salt over the surface of the soil. Specimens grown and selected from sand land in Swalig county, N. Y.

Phalaris arundinacro (Ribbon grass). This species is widely known as an ornamental grass, which was produced by its being transplanted from its native wet soil, thereby changing the color and hue of its beautiful foliage, which is so highly prized for its ornamental use. This is naturally adapted for wet soils, which can be propagated by the planting of one section of root one inch in length, to each square foot, single roots selected from the ornamental grass growing in our gardens, and it will change back to its original condition, which we have accomplished in the moist soils of this state. This species is well adapted for pasture on our low lands. Its composition as stated by Messrs. Scheovn and Ritthausen is: water, 68.7; protein, 1.9; fat, 0.4; woody fibre, 13.5; heat producing principles, 14.2; ash, 2.6. According to the Woburn experiments a black sandy loam incumbent on clay, at the time of flowering, yielded from an acre 27,225 pounds of grass, which lost 14,973 pounds in drying, and afforded 1,701 pounds of nutritive matter. From a strong, tenacious clay, the product was 34,031 pounds of grass, which lost 17,015 pounds in drying, and afforded 2,126 pounds of nutrition. If these experiments are trustworthy, it seems that the clay soil produced 4,764 pounds more of hay to the acre than a black sandy loam, and that 100 pounds of grass from it afforded 6.3 more of nutritive matter. Specimens of this grass were selected from the transplanted roots, from the best species of the ornamental ribbon grass.

Glyceria nervata, or Nerved Monna grass. This species of grass will be found growing in almost all our low, moist soils in this state. It has proved to be one of our natural grasses which has been developed here during the past few years. Our attention was first called to this species in the spring of 1877. This grass may be distinguished by its early growth, and also by its pale green culm. It flowers the middle of June; root, fibrous; cattle are very fond of it.

Very heavy growth with seeds. Must be cut for hay by the middle of June to secure its greatest value for feed for winter use, and by the last of June the culms lose their seeds and become white in color. This species of grass is very extensively cultivated in the rejected meadows of England. According to the Worburn experiments made by Mr. Sinclair the product of an acre at the time of flowering was 21,780 pounds of grass, which lost 13,620 pounds in drying, which leaves 8,168 pounds of dry hay, which gave 1,616 pounds of nutritive matter. When the seed was ripe the highest weight was exactly the same as before; its loss in drying was 13,068 pounds, and the yield of dry hay was, therefore, 8,712 pounds, or 521 pounds more than before, which yielded exactly the same amount of nutritive matter. The product of the aftermath was 9,528 pounds, which gave 521 pounds of nutritive matter. This grass, therefore, stands alone, as no other grass experimented on showed the same weight of grass and the same amount of nutritive matter at the time of flowering and at the time of ripening its seeds. The amount of aftermath or rowen also exceeds most others.

Mr. Sinclair says that in February, 1814, after a very severe winter this grass was green and succulent, while nearly three hundred other varieties that grew beside it were more or less injured by the severity of the winter. We have never seen it growing in this country except in very moist soils, where it comes up spontaneously, but it is possible that it might well repay cultivation here. In England it is found in all soils which are not too tenacious. It is well worth while to experiment with it as Mr. Sinclair found that it possessed very valuable properties and believed that it would be a very valuable addition to permanent meadows and pastures. Specimens selected in various sections of this state.

Glyceria Aquatica. Red meadow grass. It flowers in July, root creeping, perennial. This grass is made into hay which is liked by cattle. It is found in most parts of Europe and is widely diffused in this country in wettish meadows. It would pay the owner of wet meadows to give more attention to its cultivation, as it will flourish in places where few others

would grow. Its seed ripen about the middle of August, and weighs thirteen to fourteen pounds per bushel. This seed is on the New York City market for sale, sent with instructions for irrigation. May be sown with about six pounds of seed in either autumn or spring, but in very wet meadow lands it is better to set out the roots (cut into short sections) at the rate of from 3,000 to 4,000 per acre, which will spread and cover the whole surface of the ground. By its rapid growth it often obstructs ditches and water courses. It is much valued in England and Scotland for hay. On the banks and small islands of the Thames, as well as the fens of Cambridgeshire and Lincolnshire, this grass is mown twice a year, and is sheaved for hay. In the Woburn experiments this grass produced at the time of flowering, the enormous amount of 126,596 pounds of grass to the acre, which lost in drying 50,638 pounds, and gave 4,954 pounds of nutritive matter. When the seed was ripe it produced 122,512 pounds of grass, which lost it drying 61,226 pounds, and gave 4,466 pounds of nutritive matter. From this it appears that 478 pounds of nutritive matter and 14,726 pounds of dry hay was lost by postponing the cutting until the ripening of the seed. Mr. Curtis informs us that in flat countries that do not admit of being drained, this is almost the only grass used for both hay and pasture. It is stated in the Bath agricultural papers that in the fens of Ely it grows six feet high. The nutritive extract of *Glyceria Aquatica* contains a greater amount of sugar than any other grass. He offered a bundle of it to a horse that was grazing on a field of white clover, the animal ate it with a seeming relish taking a bite of clover and then another of the *Glyceria Aquatica* alternately, until the whole was consumed. Thus the report of the animal for once concurred with the report of the chemist.

Rev. B. Dacre, of Masly, has made several experiments with this grass, the results of which prove that it may be cultivated on more elevated situations than has been supposed, and that propagating it by planting the roots is the best mode, and in "the good time coming," we expect to see a wider area of this grass cultivated than has ever

been thought of before. At the grass garden at Washington I have seen the grass growing on a dry, sandy soil. It was much finer and greener than when growing in wet places. Specimens grown and selected in Dodge county, Wisconsin. As there is a large number of other species of grasses which are growing in this state we will not notice, as we do not wish to revise only those which are of agricultural and practical use to the farmers of this state. Therefore we will now inspect the analysis of the following plants, being in a green condition or state, viz.: Red clover we find is composed of the following component elements: Water, 76.0 per cent.; starch, 1.4 per cent.; woody fibre, 13.0 per cent.; sugar, 2.1 per cent.; albumen, 2.0 per cent.; extract matter and gum, 3.5 per cent.; fatty matter, .1 per cent.; phosphate of lime, 1 per cent. White clover consists of water, 80.0 per cent.; starch, 1.0 per cent.; woody fibre, 11.50 per cent.; sugar, 1.5 per cent.; albumen 2.0 per cent.; extract matter and gum, 3.4 per cent.; fatty matter, 0.2 per cent.; phosphate of lime, 0.9 per cent. Lucerne consists of water, 75.00 per cent.; starch, 2.0 per cent.; woody fibre, 14.3 per cent.; sugar, 0.8 per cent.; albumen, 1.9 per cent.; extract matter and gum, 4.4 per cent.; fatty matter, 0.6 per cent.; phosphate of lime, 0.8 per cent.

As the component factors of the grasses in their structure are under consideration, we notice their *manurial* and fertilizing values. For each ton of mixed hay fed to stock will equal in manure \$5.60 worth of the fertilizers purchased in the market, which is conceded by the very best authorities and practical observers. For each one hundred pounds of dry hay taken, the manured grass will leave in the lost dung in dryest condition, the following amount of root residue for plant food, to-wit: tall fescue, 61 pounds; sheep fescue, 266 pounds; timothy, 60 pounds; orchard grass, 30 pounds; perennial rye grass, 306 pounds; meadow fox-tail, 70 pounds; quack, 116 pounds; paa aunna, 111 pounds; Bonnus mollis, 105 pounds; Bonnus racemus, 105 pounds; Bonnus soft, 73 pounds; sweet vernal, 93 pounds. Remember these weights were given when the roots were dry or dead. In a mixture of white clover rib to make a heavy planting of quack

grass in an old pasture field, four hundred pounds of roots to each one hundred pounds of dry hay were taken off. Also in a field of clover, at the end of the second year, the fresh roots were equal to one-third of the weight of green, obtained at three cuttings, one at the first, two at the second, while at the third year, while in a dry state, there were fifty-six pounds of dry roots to every one hundred pounds of clover hay which had been carried off the field.

The close experiments demonstrated the source from which the supply of plant food is obtained to support the grasses in the generous yield in our old meadows and pasture with the droppings of the grazing stock. This position is sustained by the following extract: "There are in various parts of the island (England) certain old pastures which from time immemorial, have been celebrated for their fattening qualities. Full grown stock are turned upon them year after year for a few months, in a lean state, and after a few months, are driven off again fat and plump and fit for the butcher. This I have been told, when on the spot, has gone on time out of mind, yet the land, though no manure is artificially added, never becomes less valuable or the pasture less rich. Hence, the patriarchal men conclude that the addition of manure to the soil is unnecessary if the produce be eaten off by stock, the droppings of the animals which are fed upon the land are alone sufficient to maintain its fertility. But the reason of this continued richness of such old pastures is chiefly thus: that the cattle when put upon them, are usually full grown, they have already attained their full supply for bone and nearly as much for muscle, as they require, which on the fields they chiefly select fat from the grasses they eat, returning to the soil the phosphates selina substances and most of the nitrogen which the grasses contain. Their bodies are no doubt continually fed or renewed by new portions of these substances extracted from the food they eat, but they return to the soil an equal quantity from the waste of their own bodies. Agricultural chemistry by James F. W. Johnston, page 616.

From the foregoing account given we deduce these conclusive facts, viz.: That the natural rations of food formed

contain the following elements, viz.: 1st. *Starch* and *sugar* to supply the carbon given off in respiration. 2d. *Fat* or *fatty oil* to supply the fatty matter which exists more or less abundantly in the bodies of animals. 3rd. *Albumen* or *fibrine* to make up for the natural waste of the muscles and cartilage. 4th. *Earthy phosphates* to supply what is removed from the bones of the full grown animals by the daily waste, and 5th. *Seline substances, sulphates*, chlorine and chlorides, to replace what is daily rejected in the excretions. Again this proportion is demonstrated by the experience of some of the best stock growers in this state, who own pasture lands which afford a generous food ration at the rate of two head of stock per acre, producing a daily increase in growth and weight at the rate of four pounds of additional weight in flesh. We had the pleasure of seeing this pasture lot which produced this wonderful result. Also other pasture lots which are equally as good in the production of forage ration, even during the months of June and July of the past season. The average gain per head on this herd was two and one-third pounds per day on the feed of grass alone. This herd was delivered at the local railroad station, December 14th, for which the owner received the sum of five (5) dollars per hundred weight.

Again, he examined a pasture which was producing a generous food return at the rate of one head of fattening stock per acre. This herd was fed on grass alone from the first of May to date of our visit, about October 20th. The value of the increase of growth and weight during the period mentioned was about an average of \$14.30 per herd. This herd was sold during the month of October for the sum of \$4.25 per hundred weight, delivered at the local railroad station. Here is the rate of the productions of *the old pastures in Wisconsin*, not in *England* or *Scotland*, but located in our own state. The surface soil of these pastures was *never disturbed* by the use of *the plow*. We will examine the number of, and varieties of, grasses which are found growing upon one square foot surface of the land amongst the standard permanent pastures. 1st. In a rich old pasture upon which one acre would fatten one full grown ox

and (3) sheep, one square foot of surface contained 1,000 plants, 1062 were natural, 58 clover plants, 20 varieties of grasses. 2nd. An old pasture containing 1,000 plants, 490 were natural, 60 clover plants, 15 varieties of grasses. 3rd. Another pasture contained 910 plants, 880 were natural. 4th. An old moss covered pasture contained 634 plants, 510 were natural, no clover plants, 9 varieties of grasses. 5th. Good pasture seeded with Rye grass alone, 2 years old, contained 470 plants, 445 were natural, 18 clover plants, 10 varieties of grasses. 6th. Seeded with *Poa angustifolia* alone, also at 2 years contained 192 plants. 7th. Seeded with Meadow Fox-tail alone at 6 years contained 80 plants. 8th. Seeded with Rye grass perennial alone, at 6 years contained 70 plants. 9th. Irrigated or overflowed meadows, they often contain 1,798 plants 1,072 were natural, 92 clover plants. 30 varieties of grasses. This table was formed on examination and gathered in the country the numbers and varieties of plants which were produced from one square foot surface of land.

How is this wonderful growth obtained? Simply by a combination of plants which do not flower at the same period of time, which teaches the value of a greater number of varieties in the mixture of grass plants and seeds for permanent pasture. Also the *suicidal custom* of plowing up our *pasture lands*, and also that even our *very best pastures* are capable of receiving improvement in their present condition by noting the varieties of grasses which they contain, also incorporating by surface culture these varieties which are deep rooting into the sub lime of the soil; also those which will yield good succulent forage through the entire grazing season of the year. You will note the grasses which will accomplish this result, which we have reviewed. It must be remembered the varieties of grasses which produce the largest amount of forage are those which throw out *root leaves*. In selecting the varieties of grasses for a permanent meadow or pasture note the time of flowering. Unite those for meadows which flower about the same period of time, also those which produce an abundant amount of *leaves*, as that will increase or diminish the

amount of woody fibre contained in the crop of hay, which should yield at the rate of three (3) tons of good nutritive hay per acre when the young grass plant becomes thoroughly united with the soil. A word of *caution*: do not feed *your meadows* or cut the second crop under no condition. If its growth is too strong so as to be damaging to the ensuing crop and in the way of the mower, then feed with stock.

The idea is exploded of getting something for nothing, therefore, *nature demands* an equivalent for that which has been taken off by the cutting of this crop of grass. But to return to the pasture land, select those which flower at different periods of time. Change from meadow to pasture *vice versa* as often as the case may require to maintain its fertility while the following standard should be maintained on a large majority of our grass lands in various sections of this state. So for hay crop, three tons per acre. For grazing, from three-fourths to one acre per head, for full grown stock. This has been accomplished in many sections of this state. *Farmers* of Wisconsin, *improve* your stock by judicious breeding, and feed liberally till ready for market. Then you will prove that *grass* is *king* wearing the crown of *prosperity*, guiding the car of *progression* and wielding nature's scepter of remuneration for the labor of man (when he obeys her laws) in the improvement of our *grasses* and *grass-lands*.

THE NECESSITY FOR IMPROVING OUR GRASSES.

The food is therefore the only source whence animals derive the nurture that enters into their constitutions, and as the primary food of animals is obtained from vegetables, herb worms, and certain prosetus must necessarily be joined in the plants, they consume all elements they assimilate. It might be expected from this that the constitution of animals should approach and sometimes even be identical with that of vegetables, and it is found in fact that considerable number of ternary (composed of 3 parts) or quaternary (4 parts) organic compounds of either kingdom present the greatest analogy to one another, their identity in some cases is even complete, some fatty substances of animal origin do not differ in any way from vegetable fats. The same identity

is fostered through the entire series of quaster Way's idolized principles, as a glance at the following table which contains the results of the analysis performed by Messrs. Dumas and Cahous will show:

	FEBRINE.		ALBUMEN.		CASEINE.	
	Animal.	Vegetable.	Animal.	Vegetable.	Animal.	Vegetable.
Carbon.....	52.8	53.3	53.5	53.7	53.5	53.5
Hydrogen	7.0	7.0	7.1	7.1	7.0	7.1
Oxygen.....	23.7	23.4	23.6	23.5	23.7	23.1
Nitrogen.....	16.5	16.4	15.8	15.7	15.8	16.9
Total.....	100.00	100.00	100.00	100.00	100.00	100.00

These principles which must be added. Gelatine, the fats and alkaline salts constitute the prime work of animal tissue or the fluids which penetrate them. It is therefore necessary for us to examine each of them shortly. *Gelatine* is met with on almost all the solid parts, in the bones, tendons, cartilage, skin, cellular tissue. Muscular flesh all contain it. It is readily soluble in boiling water, cold water only takes up a small quantity of it. Two or three parts of gelatine dissolved in 100 parts of hot water suffices to turn it into a tremulous jelly; when it has become cold gelatine is extensively used in the arts under the familiar name of *glue*. *Febrine* occurs in a state of solution in blood and forms the principal ingredient in muscular flesh. It is readily obtained by whipping a quantity of blood just taken from the veins of a living animal, the white stringy masses that adhere to the rod are febrine which by gentle kneading under water become colorless *Febrine*, when moist is a highly elastic and flexible substance, dried, it leaves about thirty per cent. of water and becomes brittle leaving stem transparent. Thrown into water it gradually imbibes all it had lost in drying and regenerates its former properties. Burned and incinerated, it leaves a quantity of ash which

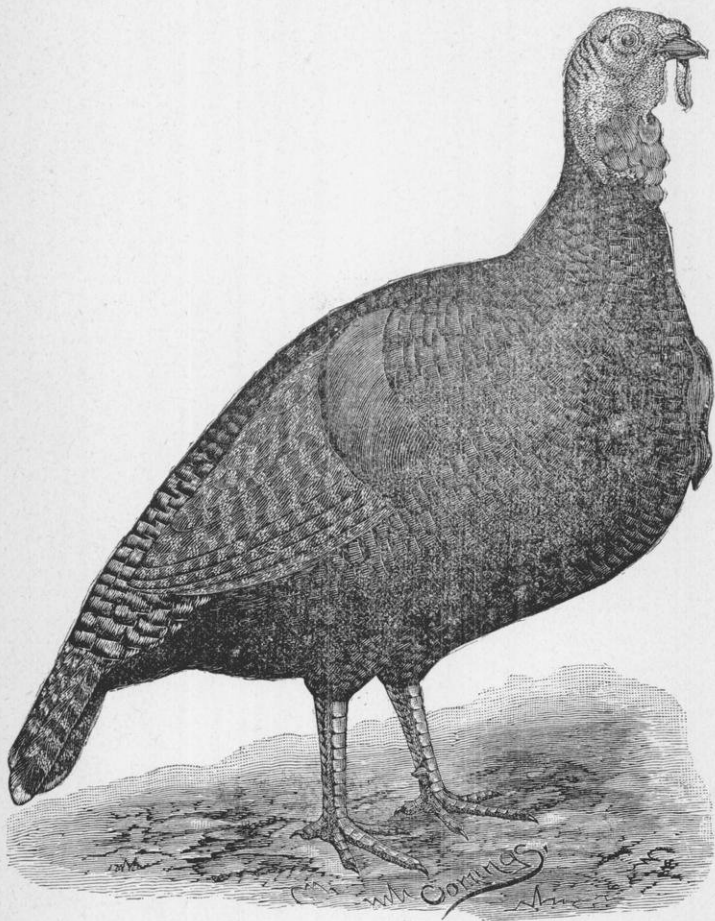
consist for the major part of the phosphate of lime, with which is mixed a small quantity of phosphate of magnesia of lime and of oxide of iron. *Albumen* exists in large quantities dissolved in water or serum of the blood and in the white of an egg; it is also found in almost all the animal fluids that are not excretions or destined to be thrown off as useless to the system. Albumen as familiarly known has the remarkable property of coagulating or turning into a soft fluid at a certain temperature of heat. 158° F. *Caseine*, is the distinguishing principal of milk, commut- ing with acids it forms an insoluble compound, and it under- goes a remarkable coalition as all the world knows in con- tact with a piece of the minor membrane of the stomach of the young animal. From the fluid it sets into a soft solid, which by degrees separate into two portions — whey and curd, and they or the *caseine* always contain the fats, and when cured leaves a considerable quantity of milk.

The physiologists distinguish these principal tissues in the bodies of animals as the muscular, the nervous and the cel- lular. Chenest has demonstrated the fact that the elements which form these tissues are similar to the nutritive extract of the food assimilated by the animals for their support. Therefore, this very important and practical lesson, the value of growing food rations which are free from an acid and bitter extract and which will produce a very un- pleasant flavor in the product of butter, cheese, beef, mut- ton and pork. The same principal will apply with equal force in the production of other meats. To accomplish this result, allow no noxious weeds to grow among the grasses. Keep covering all the surface of the soil with the varieties of which will produce the object in view. This has been accomplished in various sections of this state by the process of surface culture of the soil, sowing a generous supply of different varieties of mixed grass seed which stops the growth of all noxious plants.

At what period of growth of the grass plant should it be cut so as to secure the greatest nutritive value, is a very important consideration. From chemical experiments and from practical seeding, the fact has been most thoroughly



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Bronze Gobbler "JUMBO"—Owned by J. D. CASS, Beloit, Wis.

established that the time to cut the growing grass plant is at or as near the flowering as possible. Cut when the grass is free from the wetness of the dew and rain. Do not let it remain exposed to the extreme heat of the sun until it becomes brittle, as that will cause the leaves to break from the plant, the loss of which will greatly reduce its nutritive value for food ration. Do not let it remain exposed to the night dews after it has become partially cured, for *it must be remembered that grass will not lose any of its nutritive value during the process of drying, and the loss is caused by the bleaching of dews and rains.*

For the reason that only the excessive amount of water which the plant contains is reduced, its ingredients become crystalized and fixed in the plant, it can be restored to the former condition with the aid of moisture or by the chewing of the animal for assimilation. This position is sustained by practical feeding during the term of many years by the most progressive farmers in Europe and even in our state; also that a ration of dry food will yield a greater amount of nutriment than when in a green state if they be re cut and moistened or the crystalized elements dissolved by the aid of water (either cold or warm). Care must be taken not to allow any acid to form before feeding. This ration will give the very best results, because it is very soon assimilated by the animal not wasting energy in masticating or chewing to dissolve the crystalized particles of the food. This principle demonstrates the fact that the greatest benefit the animal derives from a given food ration depends not on the amount eaten, but the amount which is assimilated to supply the requirements of the system in sustaining all the various organizations. We have good, *practical*, progressive *German* farmers in this state who for years cut and moistened all of their dry food for their stock. They decide the process to be the most economic method to secure the greatest value for the amount of food given, also the *animal* requires the least amount of food given in this manner.

To substantiate the above statement, see Brusengault, page 393. To verify the position taken as to the value

of dry food rations, we quote the following extract from the reports made by Prof. Sanborn:

“Practical Butter Rations.—Early cut hay, cut from ground drained by nature, art, sweet fodder corn, or corn fodder, bright clover hay with the leaves all on saved sound, corn meal and a few carrots will make the *best* of butter in amount, color, aroma and texture. Bran will cut down the quantity and quality of the butter, especially if given in large quantities. I speak of it as a substitute for corn meal, not crushed but the flour of meal. The energy of the cow must be turned to milk production, not to grinding corn; not to crushing two pounds of corn to digest one. We cannot afford to grind thirty cent corn for steers, but for cows we can. Oats will not give the color to butter that corn will, while oil meal gives a less desirable color and a proper texture. A small amount of cotton seed meal is preferable to quantity if a large quantity of corn fodder is given a smaller quantity is not censurable. From two to three pounds a day is all that I should desire, while ten pounds of meal in total is enough given.”

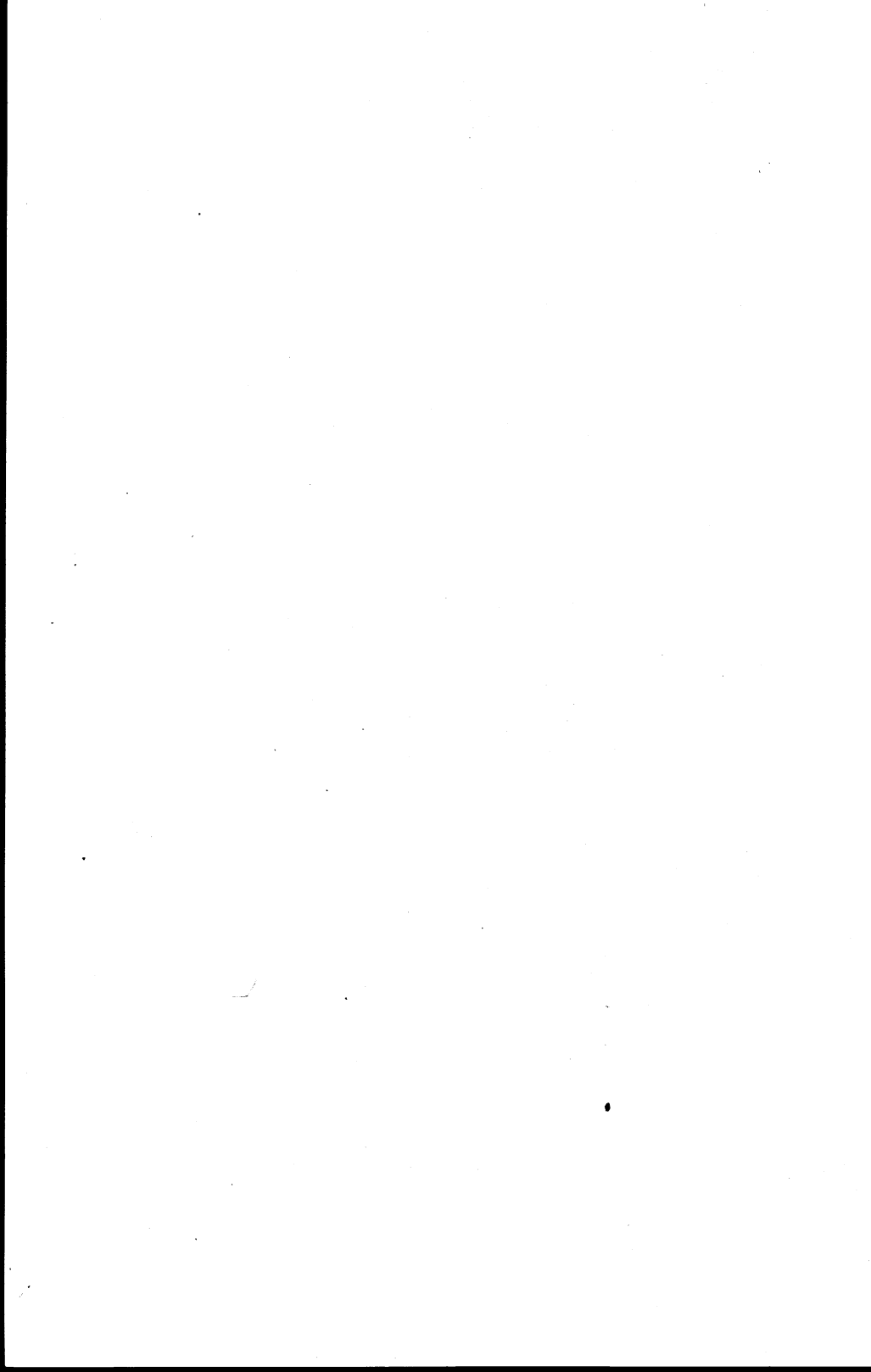
This practical food ration for winter use comes within the means of the common farmer of this state as it is not as expensive a food ration which has been demonstrated by very many practical farmers who are engaged in the production of winter butter, which commands the highest market value for its being the very best quality of butter made on our farms.

CONCLUSION.

As we were requested by the respected secretary of the agricultural society of this state to teach practical lessons in the improvement of “Our Grasses,” and not follow the lofty height of imagination, but to keep within the reach and means of the mass of farmers of this state, and if the request has been followed, then his object has been accomplished, which we leave for the farmers to decide after applying the lessons taught in this review of Our Grasses. Often we were requested by very many farmers in the state to write a list of the varieties of the grasses, and also the

amount of seeds for the mixture adapted to the different soils of this state, which list we omitted, not from intentional neglect, but for this reason, for an apology for its absence for it not being presented in this report, viz.: As we have reviewed about thirty different varieties of the grasses which are growing in this state (with only one exception, *holcus litinus*, meadow soft grass, which is especially recommended for the sandy lands of this state), also giving their analytical values, also the class of the soil upon which they will grow and thrive, and the time of flowering for the guide from which the farmer to make his selections for the mixture in the combinations for meadow or pasture use.

Therefore, we would very respectfully call the attention of the farmers to this section of our work. Study well the component parts which form the plant and compare their different properties of value in forming a food ration for all class of stock for winter's feed. Do not exceed fifteen (15) pounds per acre of mixed seed, for a greater amount would be a loss of money and seed. (Note the remarks on the quantity of a mixture of grass seed to be sown per acre.) Again, we have not introduced a statement in this review but what has been demonstrated by *practical experiments*, as this paper is dedicated to the farmers of this state to aid as a guide in the improvement of grasses and grass land that may become equal in those productions of the very best of quality and quantity to any section of country, even England and Scotland not excepted. In the province of Ontario, Canada, the farmers are making rapid strides in the improvement of these grasses, and their experimental station is giving splendid assistance in their progressive work. May the investigation of the value of our grasses continue, and their condition be improved by a more attentive culture are the wishes of *all* who are interested in this progressive work. Cultivate and sow seed upon the barren spots, until its surface becomes, like green verdure, yielding a heavy burthen. This place to become a *scene of delight*. He who communes amongst trees and grasses will find his Maker there to teach his listening heart.



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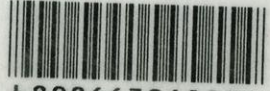
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